



**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
QUARTERLY
ENVIRONMENTAL MONITORING REPORT
JANUARY - MARCH 1999**



Rocky Flats Environmental Technology Site
P.O. Box 464, Golden, CO 80402-0464

MAY 1999
RF/RMRS-99-375.UN

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Points of Contact:

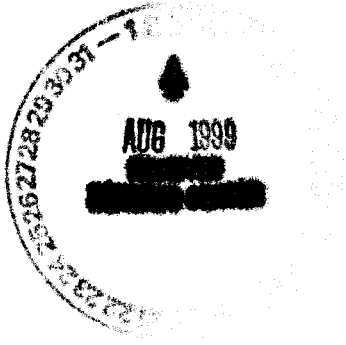
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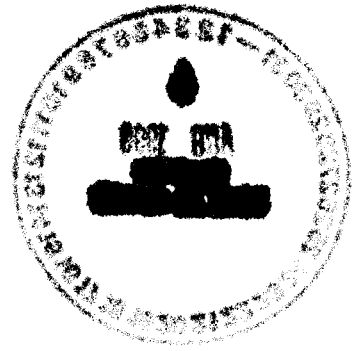
**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
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PREPARED BY ROCKY MOUNTAIN REMEDIATION SERVICES, L.L.C.

***THE DATA IN THIS DOCUMENT MAY BE PRELIMINARY AND COULD CHANGE AFTER
THE DATA HAVE BEEN VERIFIED OR VALIDATED.***

**MAY 1999
RF/RMRS-99-375.UN**

ADMIN RECORD



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HIGHLIGHTS FOR JANUARY – MARCH 1999

This report is produced and distributed quarterly as part of our ongoing Agreement in Principle and as a forum for the Rocky Flats Cleanup Agreement (RFCA) quarterly monitoring requirement. As discussed at the last Exchange of Information Meeting held on November 17, 1999, the Site is consolidating its reporting for selected media. In an effort to provide a more meaningful interpretation of the data presented and to save some natural resources, namely trees, the Site will be providing analytical data in the following formats.

Airborne effluent data is represented by a single graph providing cumulative plutonium emissions for 1997 and 1998. Ambient air data is represented by two graphs – a summary of estimated off-site dose as compared to a 10 Mrem per year standard, and air concentrations at perimeter sample locations expressed as a percentage of EPA's air concentration-based dose limit for members of the public. Meteorological data are represented by one windrose and a climatic summary for each month in the reporting period.

Compliance data in support of the Site National Pollutant Discharge Elimination System (NPDES) permit are presented without change. Analytical data collected in support of RFCA will be limited to the following locations: GS01, GS03, GS08, GS11, GS31, GS10, SW027, SW093, SW022 and SW091. Data include the hydrograph, mean daily flow and available water quality measurements for each location during the reporting period.

In the Fall of 1998, DOE, RFFO staff and the Kaiser-Hill Team initiated discussions with CDPHE and EPA Region VIII staff to eliminate the annual Industrial Area Interim Measures/Interim Remedial Action (IA IM/IRA) report. The IA IM/IRA predated both the Rocky Flats Cleanup Agreement (RFCA) and the Integrated Monitoring Plan (IMP) and it was determined during several Groundwater Working Group meetings that a significant degree of environmental data reporting redundancy had developed. After discussing reporting details for all air, surface water and groundwater data, it was agreed upon in the December 1998 and January 1999 IMP meetings to eliminate the annual IA IM/IRA report. This action was then sent to the RFCA coordinators who formally agreed to eliminate the report in February 1999.

As these decisions were made just prior to the previous Quarterly Environmental Monitoring Report published and presented in late February 1999, we are now beginning to implement the inclusion of additional surface water data with this report. Additional surface water locations included beginning with this report are GS27, GS32, GS39 and GS40. Other stations may appear or be deleted as performance monitoring locations are added or dropped, as well as any new source detection locations that may be required. Some locations, like GS32, have no flow monitoring capabilities and only analytical data are provided. An additional section is added with this report to provide quarterly summary information for the Incidental Waters program. It is expected that an annual summary for those surface water locations previously included in the annual IA IM/IRA will appear in the August 1999 report.

Groundwater data included in the annual IA IM/IRA will continue to be included in the Quarterly and Annual Groundwater Reports published under separate cover. Ambient Air data included in the IA IM/IRA will be recorded in the RAD Air Emissions Annual Report. Any project specific or D&D ambient air monitoring information will be presented as available at the Quarterly Exchange of Information Meeting, as was recently done for the T1 Trench Project.

For information concerning analytical data from any medium that is no longer included in this report, contact Steve Nesta, Kaiser-Hill Team at 303-966-6386.

Airborne Effluent

Discussions involving complete isotopic analytical data through February 1999 are included in this report. Data for March 1999 are not complete at this time. All data are within the normally observed ranges of concentrations for their respective locations.

As a result of the validation of the 1998 data inputs in the Air Monitoring System Database, some errors were realized. The data used for this report reflect the corrected release and concentration information.

Consistent with all other uses of these data, positive values only are included in the total release calculation (the negative values are treated as zeros). The uncertainty calculation does reflect all values.

Ambient Air

Discussions involving complete isotopic analytical data through February 1999 for coarse (> 10 micrometers) and fine (<10 micrometers) particles are included in this report. Data for March 1999 are not complete at this time. All data are within the normally observed ranges of concentrations for their respective locations.

Laboratory results and comparisons of fine and coarse particle concentrations suggest that the analytical results of the fiberglass filters from S-132 and S-107 were exchanged. This report is under investigation.

A malfunction in the hour meter (used to establish filter exposure time) was discovered at sampler S-138 for the month of January and part of February. Run times have been estimated based on continuous operation between filter changes, instead of elapsed time meter readings. Routine radiotelemetry data do not indicate any outages during this period. The uncertainty in the total run time is less than five hours out of 864 hours.

Meteorology and Climatology

Meteorological data are routinely measured from instrumentation on a 61-meter tower located in the west buffer zone at an elevation of 1,870 meters (6,140 feet) above sea level. All meteorological data are being collected on a real-time basis and are transmitted as 15 minute averaged values to the Computer Assisted Protective Action Recommendations System (CAPARS) model for emergency response purposes. The same data are logged at the tower and downloaded for air quality and surface water modeling purposes.

Climatic summaries and Windroses for January through March 1999 are included in this report.

As a result of the new protocols used to validate the meteorological data, each 15 minute-averaged observation is validated, rather than the entire observation record for the same time period (which might contain 70 different observations-i.e. temperature, wind speed, etc.). Missing data will be reported with respect to the wind speed and wind direction values, for example, rather than recording all observations missing for the same 15-minute period. There were no missing wind speed/direction data for this time period.

Surface Water

Surface water analytical data collected during second quarter of FY 99 (January, February, and March) for NPDES/FFCA permit compliance are presented in this report. All reported data are consistent with historical measurements and within permit limitations.

Hydrologic Monitoring and Rocky Flats Cleanup Agreement (RFCA) Monitoring

All available analytical data collected during second quarter of FY 99 (January, February, and March) from samples collected for RFCA and Hydrologic Monitoring are included in this report.

Incidental Water Monitoring

A summary of Incidental Waters dispositioned during second quarter of FY99 (January, February, and March) are presented in this report.

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1. AIR DATA

1.1 EFFLUENT AIR DATA

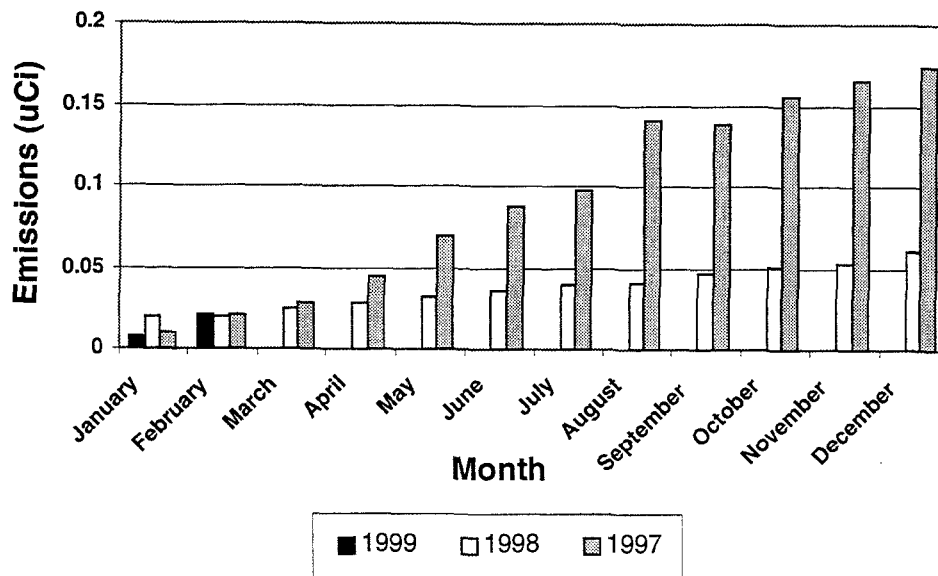
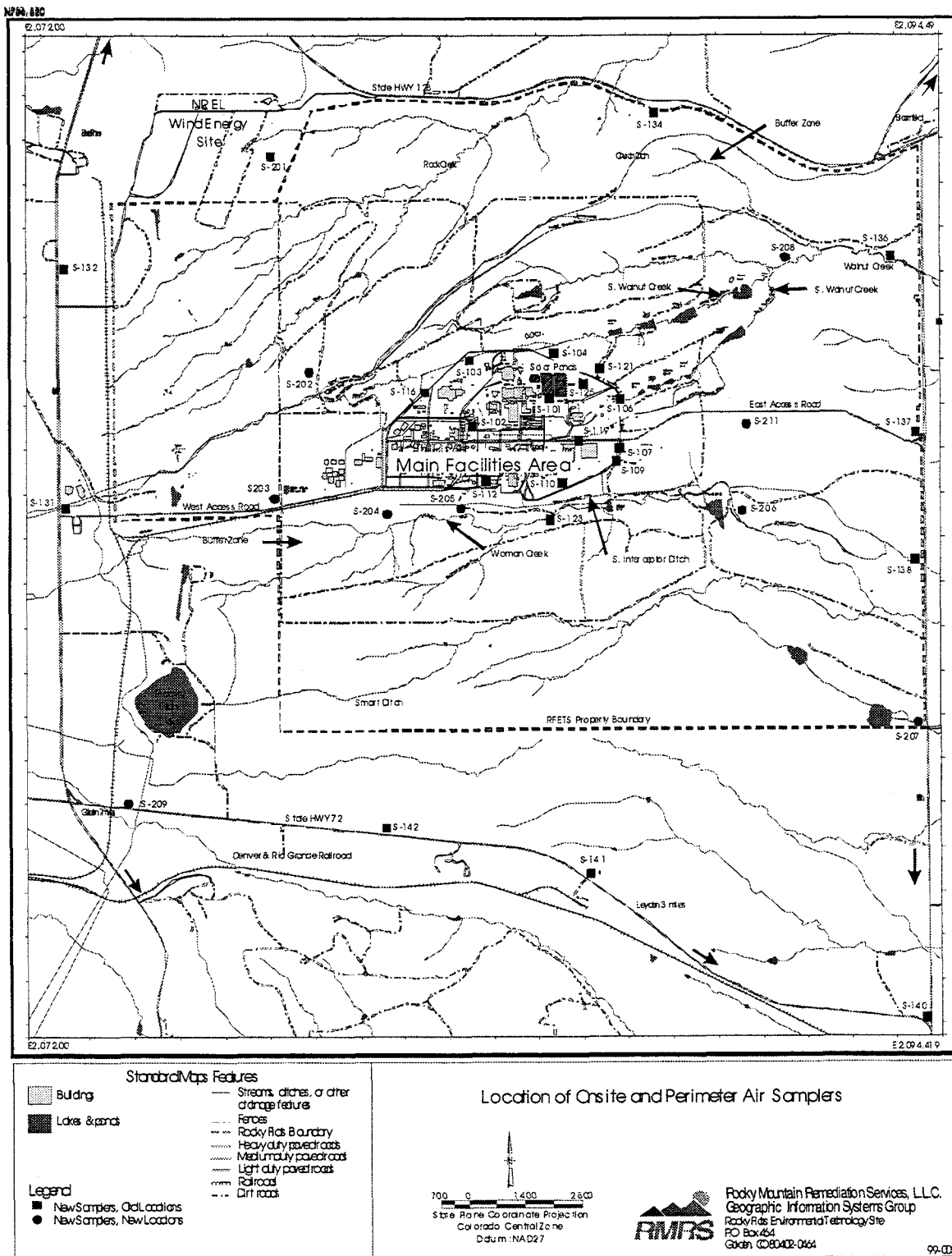


Figure 1-1. Cumulative Plutonium Airborne Effluent Emissions

The above graph shows the cumulative airborne effluent emissions of plutonium from building stacks. January and February 1999 emissions are consistent with previously measured concentrations in 1997 and 1998, with a February cumulative plutonium emission of 0.02 micro Curies (uCi). The total plutonium emissions for 1998 were 0.06 (uCi), compared to the 0.17 uCi total plutonium emissions for 1997.

The americium and uranium airborne effluent emissions results are dominated by their uncertainties. Therefore, it is difficult to draw conclusions for americium and uranium. The monthly tritium airborne effluent emissions for January through March 1999 are below the mean monthly emissions in 1998.

Map 1-1. Location of Onsite and Perimeter Air Samplers



1.2 AMBIENT AIR DATA

1.2.1 Perimeter Sampler Locations

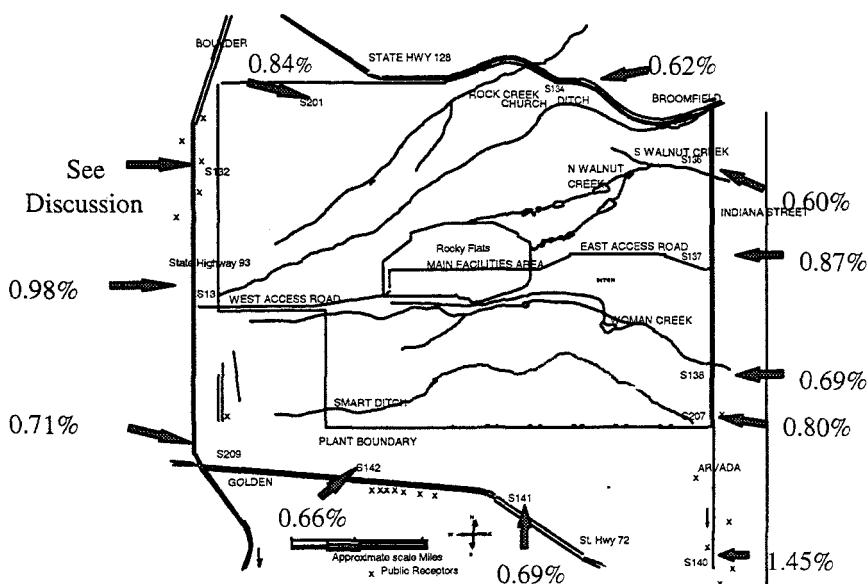


Figure 1-2. Perimeter Samplers Dose Map

The above map illustrates the perimeter Radioactive Ambient Air Monitoring Program (RAAMP) sampler locations and the twelve month rolling average dose through February 1999, expressed as a percentage of EPA's air concentration-based dose limit for members of the public.

The percentages include the naturally occurring uranium isotopes as well as the isotopes from site contributions. The average concentration observed at location S-140 is projected to equate to the highest dose, as we have typically seen in the past. The dose percentage for location S-132 is uncertain at this time. Laboratory results and comparisons of fine and coarse particle concentrations suggest that the analytical results of the fiberglass filters from S-132 and S-107 were exchanged. This report is under investigation.

The percentage values are based on the measured air concentrations, averaged over the year, converted as a percent of the Rad NESHAP standard.

1.2.2 Perimeter Sampler Locations – Dose Rate Graphs

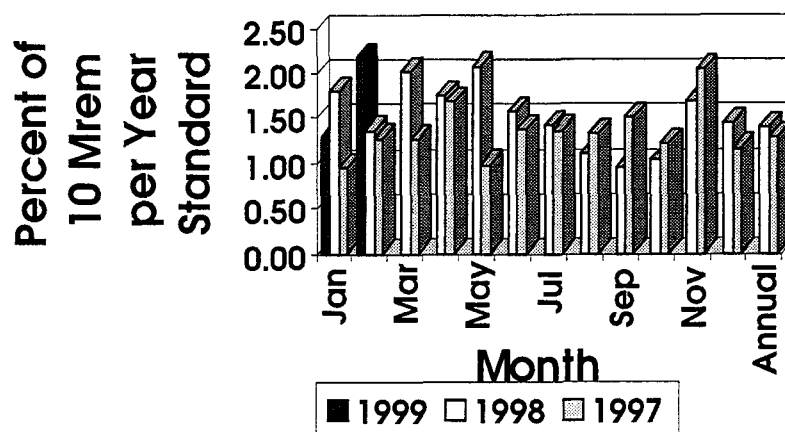


Figure 1-3. Offsite Dose Rate Summary

The above graph illustrates the monthly estimated dose rates at the perimeter sampler showing highest radionuclide concentrations, including contributions from naturally occurring uranium isotopes. All of the highest dose rates were seen at either location S-132 or S-140, with equal frequency. The monthly dose rates were less than 2.5 percent of the 10 mrem standard.

1.2.2 Perimeter Sampler Locations – Dose Rate Graphs, continued

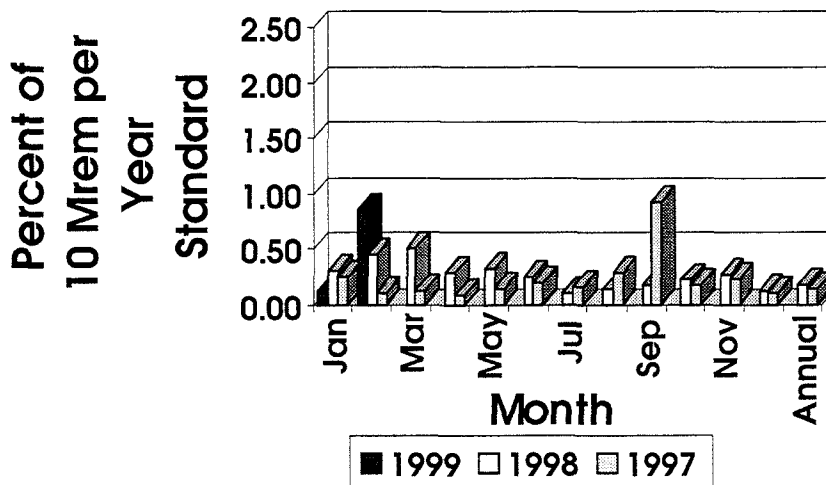


Figure 1-4. Offsite Dose Rate Summary Without U-234 and U-238

Omitting the uranium 234 and 238 contributions is thought to better reflect the contribution from Site operations and results in an estimated dose rate of less than 0.9% of the standard.

Ambient concentrations and dose rates for 1999 are similar to the rates observed in 1997 and 1998.

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2. METEOROLOGY AND CLIMATOLOGY

2.1 WIND ROSES FOR JANUARY – MARCH 1999

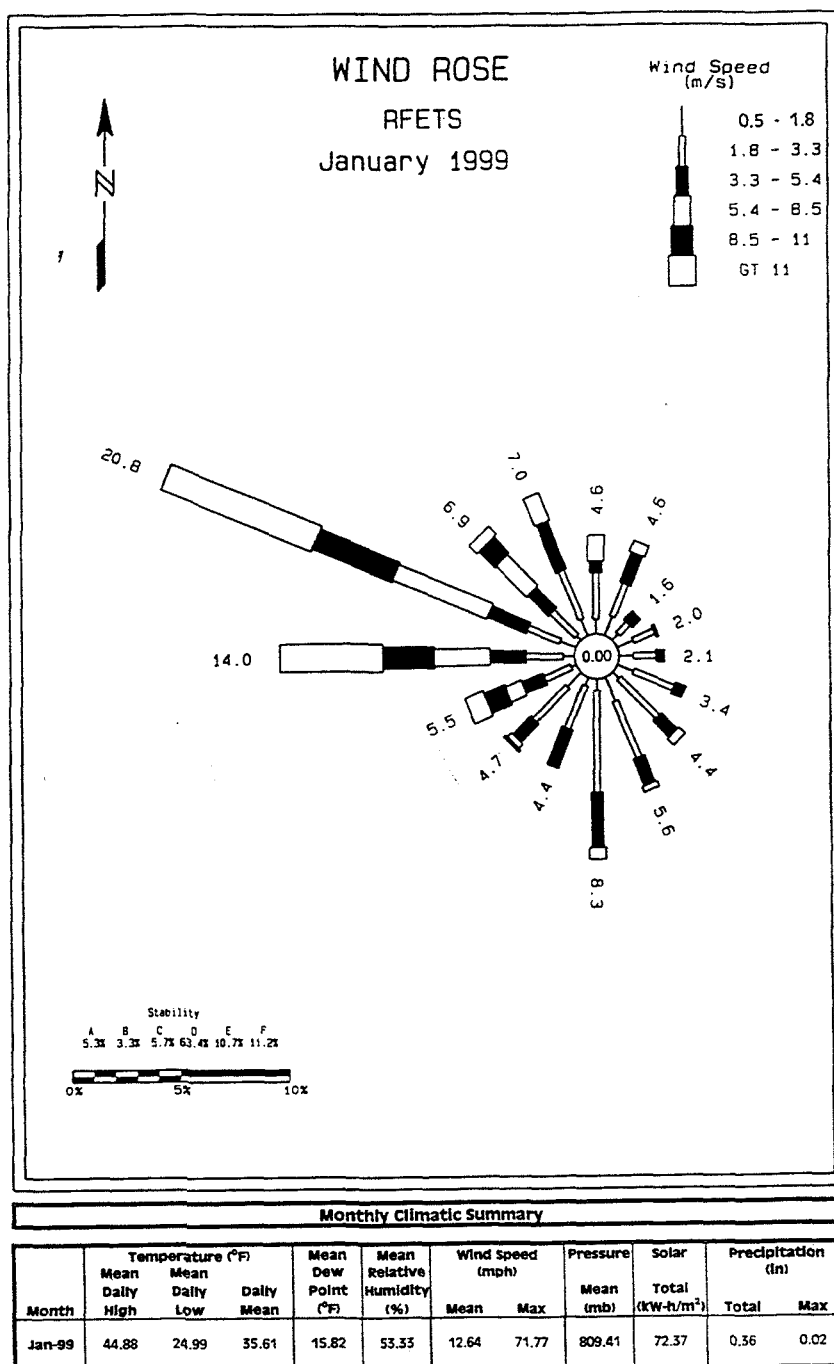


Figure 2-1. Wind Rose for Rocky Flats Environmental Technology Site for January 1999

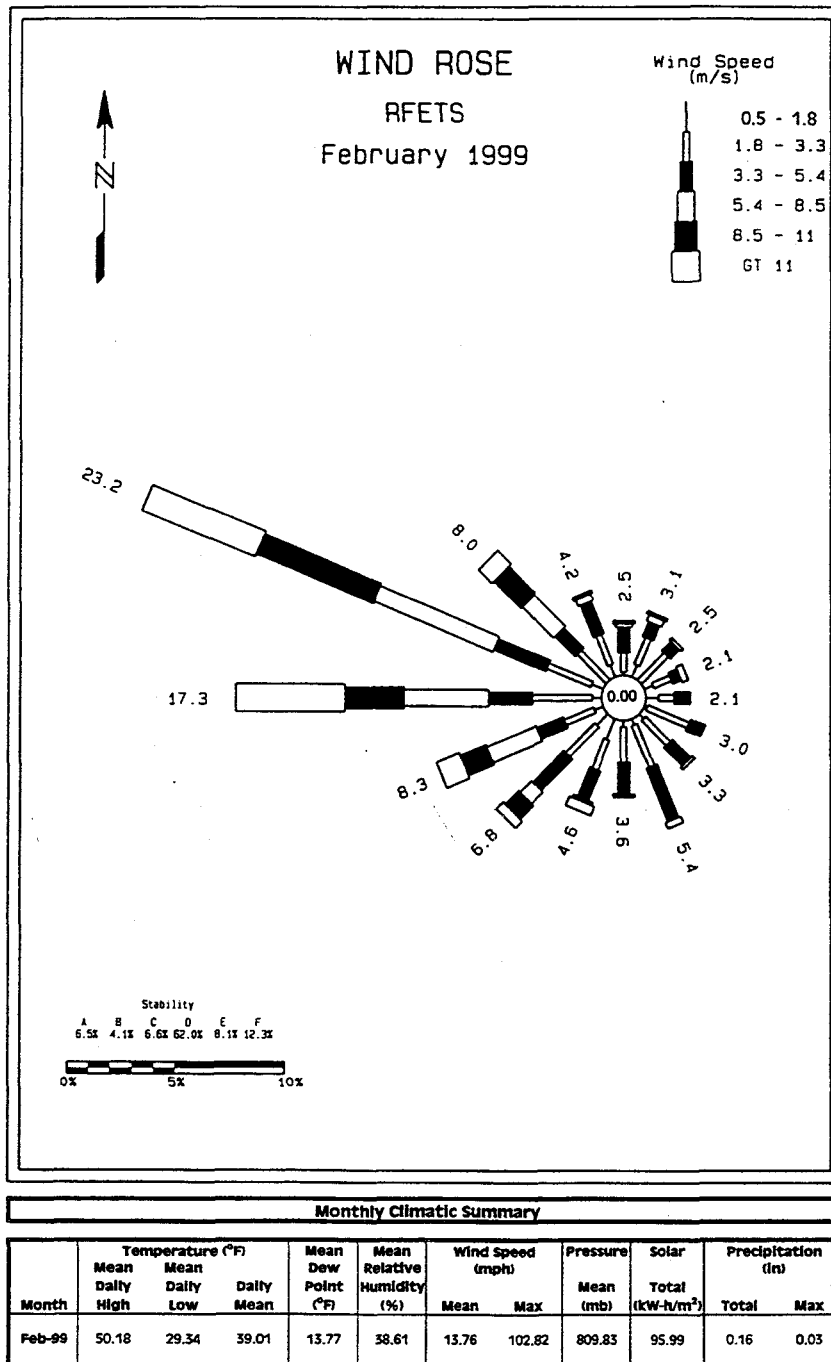


Figure 2-2. Windrose for Rocky Flats Environmental Technology Site for February 1999

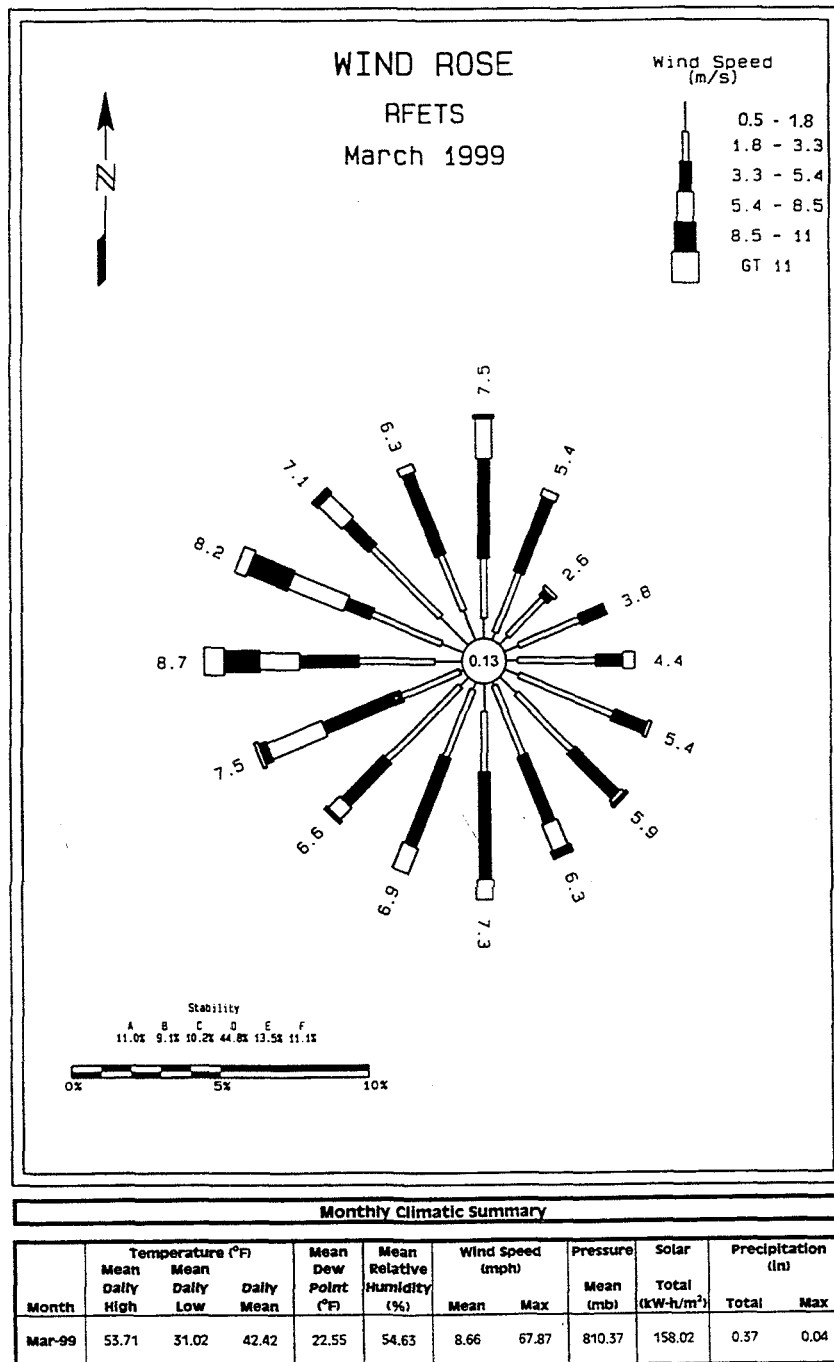


Figure 2-3. Windrose for Rocky Flats Environmental Technology Site for March 1999

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3. SURFACE WATER DATA

Map 3-1. Holding Ponds and Liquid Effluent Water Courses

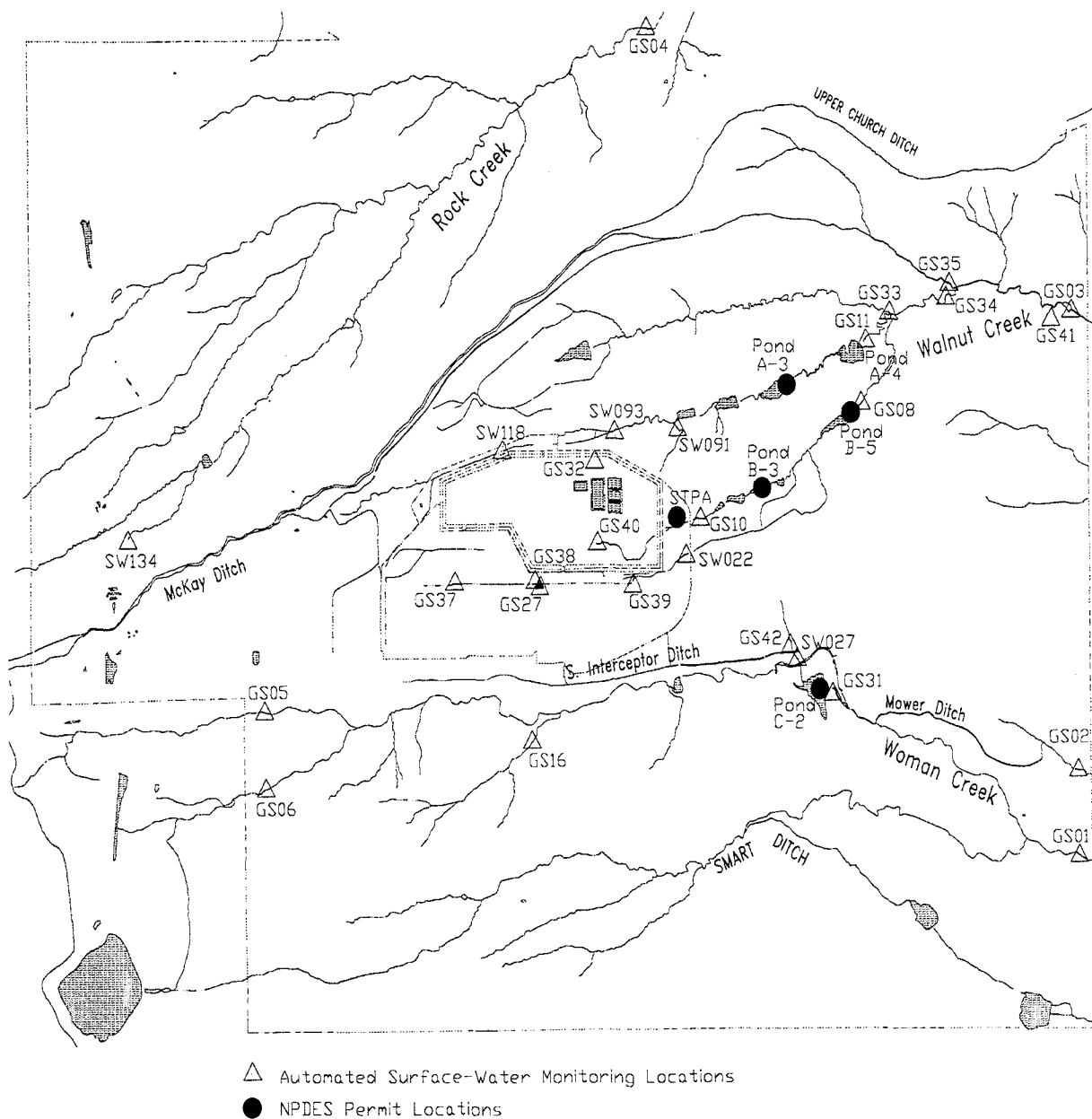


Table 3-1. Pond B-3 (Outfall 001A)

Dates of discharge 01/01/99 – 03/11/99 and 03/12/99 – 03/31/99

Parameter & Units	Measured 30-day Average	Limit 30-Day Average	Measured 7-Day Average	Limit 7-Day Average	Measured Daily Maximum	Limit Daily Maximum
NO3/NO2, mg/l	3 - 7	10	5 - 11	20	N/A	N/A
TRC, mg/l	N/A	N/A	N/A	N/A	0.06 – 0.09	0.5
BOD5, mg/l	14 - 25	a	N/A	N/A	21 - 38	a
CBOD5, mg/l	3 - 4	a	N/A	N/A	5 - 6	a
TSS, mg/l	<13	a	N/A	N/A	8 - 20	a

a Report Only

N/A Not Applicable

TRC Total Residual Chlorine

TSS Total Suspended Solids

BOD5 Biochemical Oxygen Demand, 5-Day Test

CBOD5 Carbonaceous Biochemical Oxygen Demand, 5-Day Test

Note: Results are the range of value measured during the reporting period

Table 3-2. Sewage Treatment Plant (Outfall STP A)

Dates of discharge 01/01/99 – 03/31/99. Metals and VOA samples collected 01/05/99, 02/02/99 & 03/02/99

Parameter & Units	Measured 30-day Average	Limit 30-Day Average	Measured 7-Day Average	Limit 7-Day Average	Measured Daily Minimum	Limit Daily Minimum	Measured Daily Maximum	Limit Daily Maximum	Observed Sheen	Measured Result
pH, SU	N/A	N/A	N/A	N/A	6.7 – 6.9	6.0	7.4 – 7.5	9.0	N/A	N/A
TSS, mg/l	<5	30	<5	45	N/A	N/A	N/A	N/A	N/A	N/A
Total Phos., mg/l	1.3 - 3	8	N/A	N/A	N/A	N/A	3 – 3.8	12	N/A	N/A
TRC, mg/l	<0.02	a	<0.02	a	N/A	N/A	N/A	N/A	N/A	N/A
Total Cr., ug/l	<1.4	50	N/A	N/A	N/A	N/A	<1.7	100	N/A	N/A
F. Coliform, #/100ml	<6	200b	6 - 10	440b	N/A	N/A	N/A	N/A	N/A	N/A
CBOD5, mg/l	3 - 4	10	N/A	N/A	N/A	N/A	4 - 5	25	N/A	N/A
Oil & Grease	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	c	N/A
WET										
Ceriodaphnia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>100
Fathead Minnows	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>100
Antimony, ug/l	<2.0	a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic, ug/l	1.5 – 1.9	a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Beryllium, ug/l	<0.5	a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium, ug/l	<0.5	a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper, ug/l	1.6 – 2.3	a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron, ug/l	139 – 223	a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lead, ug/l	<1.0	a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Manganese, ug/l	13.4 – 22.6	a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mercury, ug/l	<0.12	a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nickel, ug/l	1.2 – 2.5	a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver, ug/l	<1.0	a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc, ug/l	17.4 – 42.3	a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VOC's, ug/l	D	a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

a Report Only

b Geometric

c No Sheen Observed

d None Detected Above PQL

N/A Not Applicable

TSS Total Suspended Solids

TRC

CBOD5

PQL

WET

SU

Total Residual Chlorine

Carbonaceous Biochemical Oxygen Demand, 5-Day Test

Practical Quantitation Limit

Whole Effluent Toxicity

Standard Units

Table 3-3. Ponds – Interior and Terminal

Pond A-3 discharged 01/27/99 – 01/28/99; Pond A-4 discharged 01/07/99 – 01/15/99 & 02/18/99 – 02/26/99; and Pond B-5 discharged 03/22/99 – 03/31/99. Pond C-2 was not discharged during reporting period.

Location, Parameter and Units	Measured 30-day Average	Limit 30-Day Average	Measured 7-Day Average	Limit 7-Day Average	Measured Daily Minimum	Limit Daily Minimum	Measured Daily Maximum	Limit Daily Maximum	Measured Result
Pond A-3 (Outfall 002) pH, SU	N/A	N/A	N/A	N/A	8.1	6.0	8.2	9.0	N/A
NO3/NO2, mg/l	2.4	10	N/A	N/A	N/A	N/A	2.4	20	N/A
Pond A-4 (Outfall 005A) Total Cr., ug/l	N/A	N/A	N/A	N/A	N/A	N/A	<2	50	N/A
WET									
Ceriodaphnia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>100
Fathead Minnows	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>100
Pond B-5 (Outfall 006A) Total Cr., ug/l	N/A	N/A	N/A	N/A	N/A	N/A	<1	50	N/A
WET									
Ceriodaphnia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>100
Fathead Minnows	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>100
NO3/NO2, mg/l*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pond C-2 (Outfall 007A) Total Cr., ug/l	N/A	N/A	N/A	N/A	N/A	N/A		50	N/A
WET									
Ceriodaphnia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Fathead Minnows	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

* Sample and analysis required only if Pond B-3 is bypassed

N/A Not applicable

SU Standard units

TRC Total residual chlorine

WET Whole Effluent Toxicity

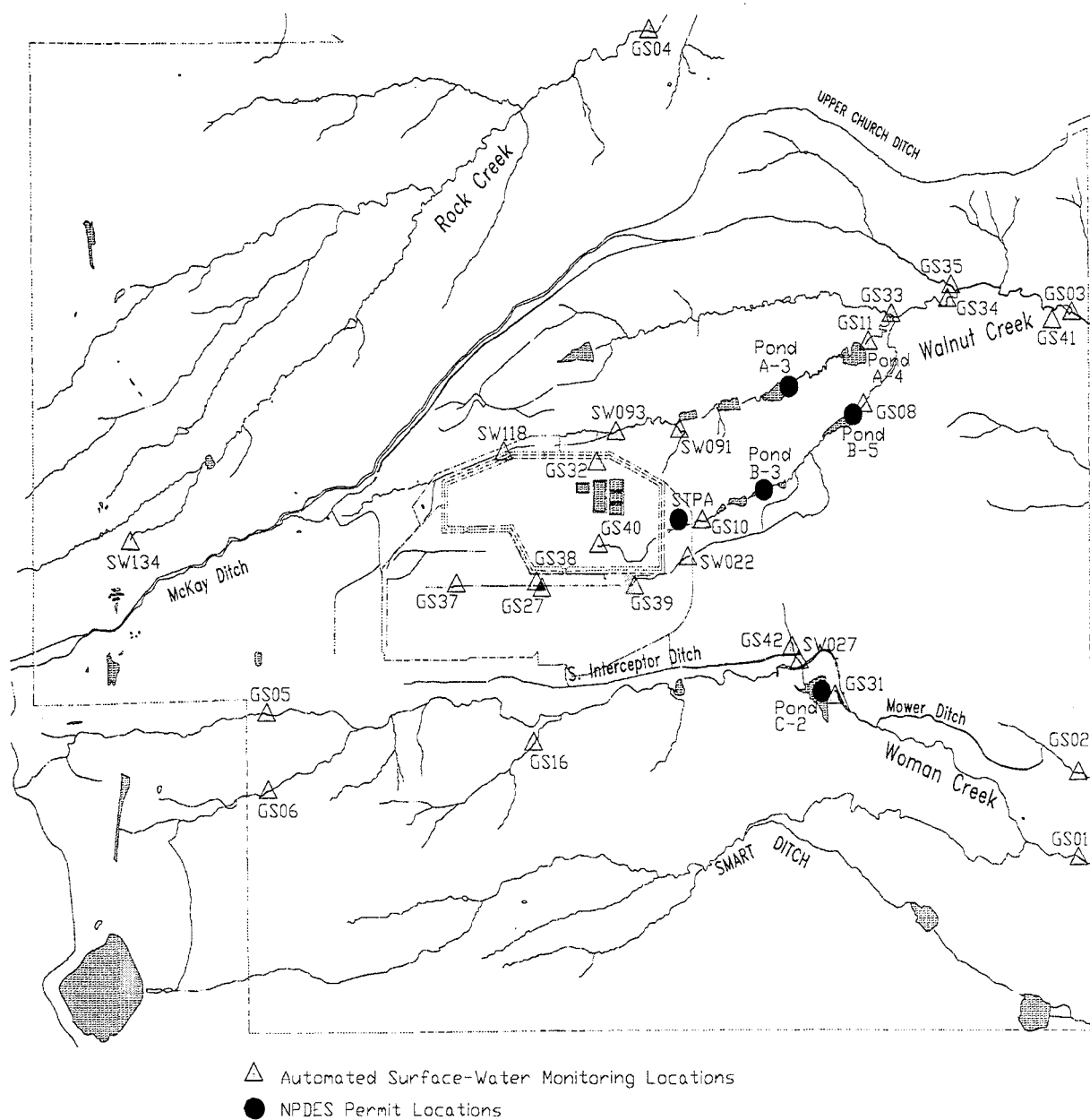
Table 3-4. Daily Transfer Flow Data Recorded for Pond B-5 to Pond A-4

Date	Pond B-5 to Pond A-4 (gal)	Date	Pond B-5 to Pond A-4 (gal)	Date	Pond B-5 to Pond A-4 (gal)
01/01/99	No Transfer	02/01/99	No Transfer	03/01/99	No Transfer
01/02/99	No Transfer	02/02/99	No Transfer	03/02/99	No Transfer
01/03/99	No Transfer	02/03/99	No Transfer	03/03/99	No Transfer
01/04/99	No Transfer	02/04/99	No Transfer	03/04/99	No Transfer
01/05/99	No Transfer	02/05/99	No Transfer	03/05/99	No Transfer
01/06/99	No Transfer	02/06/99	No Transfer	03/06/99	No Transfer
01/07/99	No Transfer	02/07/99	No Transfer	03/07/99	No Transfer
01/08/99	No Transfer	02/08/99	No Transfer	03/08/99	No Transfer
01/09/99	No Transfer	02/09/99	No Transfer	03/09/99	No Transfer
01/10/99	No Transfer	02/10/99	No Transfer	03/10/99	No Transfer
01/11/99	No Transfer	02/11/99	No Transfer	03/11/99	No Transfer
01/12/99	No Transfer	02/12/99	No Transfer	03/12/99	No Transfer
01/13/99	No Transfer	02/13/99	No Transfer	03/13/99	No Transfer
01/14/99	No Transfer	02/14/99	No Transfer	03/14/99	No Transfer
01/15/99	No Transfer	02/15/99	No Transfer	03/15/99	No Transfer
01/16/99	No Transfer	02/16/99	No Transfer	03/16/99	No Transfer
01/17/99	No Transfer	02/17/99	No Transfer	03/17/99	No Transfer
01/18/99	1,160,000	02/18/99	No Transfer	03/18/99	No Transfer
01/19/99	1,533,000r	02/19/99	No Transfer	03/19/99	No Transfer
01/20/99	1,469,000	02/20/99	No Transfer	03/20/99	No Transfer
01/21/99	1,420,000	02/21/99	No Transfer	03/21/99	No Transfer
01/22/99	1,371,000	02/22/99	No Transfer	03/22/99	No Transfer
01/23/99	1,305,000	02/23/99	No Transfer	03/23/99	No Transfer
01/24/99	1,241,000	02/24/99	No Transfer	03/24/99	No Transfer
01/25/99	843,000	02/25/99	No Transfer	03/25/99	No Transfer
01/26/99	No Transfer	02/26/99	No Transfer	03/26/99	No Transfer
01/27/99	No Transfer	02/27/99	No Transfer	03/27/99	No Transfer
01/28/99	No Transfer	02/28/99	No Transfer	03/28/99	No Transfer
01/29/99	No Transfer			03/29/99	No Transfer
01/30/99	No Transfer			03/30/99	No Transfer
01/31/99	No Transfer			03/31/99	No Transfer
Total	10,342,000	Total	No Transfer	Total	No Transfer

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4. HYDROLOGIC AND ROCKY FLATS CLEAN-UP AGREEMENT (RFCA) DATA

Map 4-1. Gaging Station Locations



4.1 FLOW MONITORING

Table 4-1. Gaging Station GS01: Mean Daily Discharge (cubic feet per second)

Day	January-99	February-99	March-99
1	0.399	0.187	0.095
2	0.282	0.153	0.088
3	0.233	0.117	0.086
4	0.221	0.122	0.083
5	0.236	0.158	0.126
6	0.283	0.176	0.196
7	0.309	0.179	0.208
8	0.260	0.177	0.197
9	0.209	0.161	0.160
10	0.192	0.159	0.136
11	0.203	0.143	0.126
12	0.205	0.165	0.143
13	0.197	0.226	0.244
14	0.181	0.252	0.401
15	0.153	0.203	0.272
16	0.160	0.177	0.194
17	0.145	0.164	0.147
18	0.147	0.136	0.137a
19	0.148	0.125a	0.133
20	0.165	0.112a	0.127
21	0.168	0.124	0.125
22	0.199	0.121	0.115
23	0.285	0.102	0.120
24	0.441	0.096	0.121
25	0.305	0.108	0.119a
26	0.287	0.138	0.129
27	0.243	0.097	0.125
28	0.205	0.088	0.110
29	0.176	NA	0.108
30	0.174	NA	0.101
31	0.187	NA	0.089
Monthly Average (cfs)	0.226	0.149	0.147

Monthly Discharge

Cubic Feet	604440	359591	394077
Gallons	4521529	2689927	2947903
Acre-Feet	13.87	8.25	9.05

Note: Mean flow values are reported to the nearest 0.001 cfs, values less than 0.0005 cfs are reported as zero.

^a Contains data estimated from field observations and electronic record at adjacent or comparable gages.

Gaging Station GS01 is located at 39° 52' 40"N, 105° 09' 55"W, at Woman Creek and Indiana Street (See Section 4 Map). This station is a RFCA Point of Compliance, a Buffer Zone Monitoring Location and a monitoring point for water leaving the Site and flowing to Woman Creek Reservoir. This station collects samples for selected radionuclides using continuous flow-paced sampling and storm event sampling for selected water quality parameters, metals, and major ions.

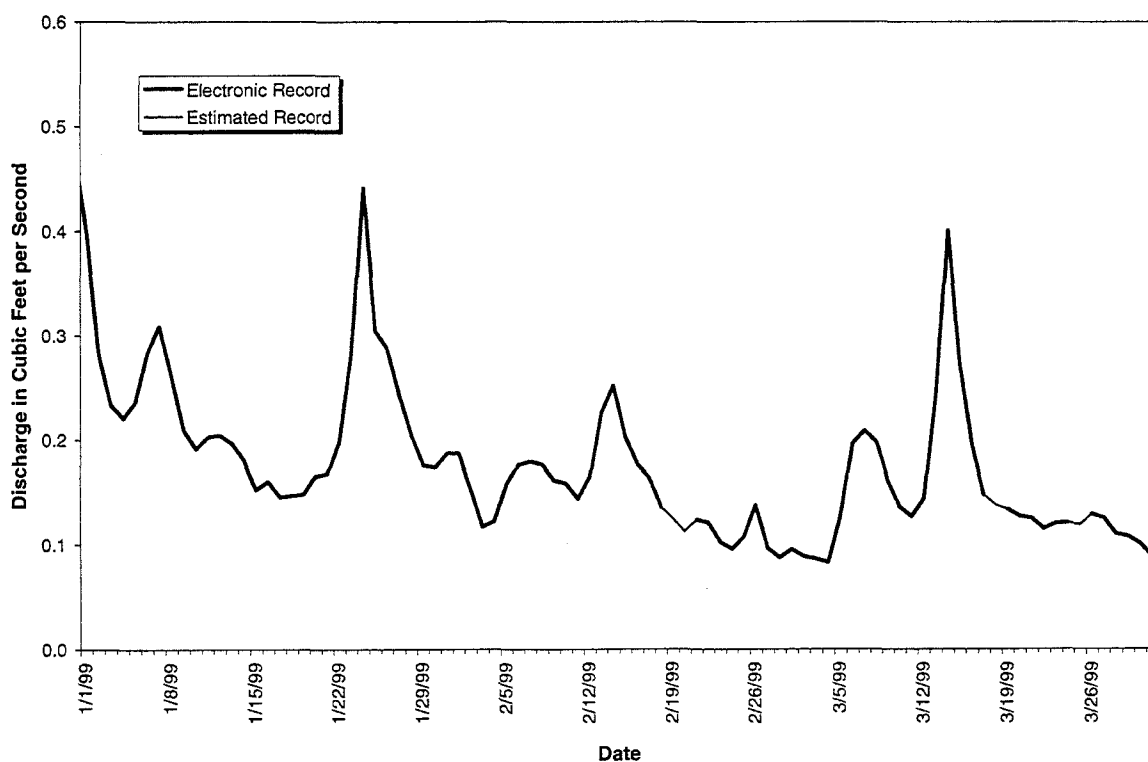


Figure 4-1. Mean Daily Discharge at GS01, Water Year 1999 (January, February, and March)

Table 4-2. Gaging Station GS03: Mean Daily Discharge (cubic feet per second)

Day	January-99	February-99	March-99
1	0.004	0.006	0.003
2	0.009	0.006	0.003
3	0.006	0.005	0.003
4	0.007	0.006	0.003
5	0.005	0.006	0.004
6	0.002	0.006	0.002
7	1.077	0.005	0.002
8	2.636	0.005	0.002
9	2.408	0.006	0.003
10	2.185	0.008	0.001
11	1.694	0.007	0.002
12	1.746	0.005	0.004
13	1.441	0.006	0.002
14	1.184	0.006	0.002
15	0.497	0.006	0.001
16	0.022	0.006	0.001
17	0.011	0.005	0.001
18	0.010	0.955	0.001
19	0.008	2.344	0.001
20	0.008	2.270	0.001
21	0.010	2.077	0.001
22	0.009	1.745	0.415
23	0.008	1.694a	1.602
24	0.008	1.272	1.726
25	0.008	1.050	1.513
26	0.008	0.424	1.424
27	0.007	0.009	1.561
28	0.007	0.004	1.593
29	0.006	NA	1.139
30	0.006	NA	0.772
31	0.006	NA	0.767
Monthly Average (cfs)	0.485	0.498	0.405

Monthly Discharge

Cubic Feet	1299511	1204571	1084790
Gallons	9721014	9010820	8114791
Acre-Feet	29.83	27.65	24.90

Note: Mean flow values are reported to the nearest 0.001 cfs, values less than 0.0005 cfs are reported as zero.

^a Contains data estimated from field observations and electronic record at adjacent or comparable gages.

Gaging Station GS03 is located at 39° 54' 7"N, 105° 9' 59"W, at Walnut Creek and Indiana Street (See Section 4 Map). This station is a RFCA Point of Compliance, a Buffer Zone Monitoring Location and a monitoring point for water leaving the Site and flowing to the Broomfield Diversion Ditch. This station collects samples for selected radionuclides using continuous flow-paced sampling and storm event sampling for selected water quality parameters, metals, and major ions.

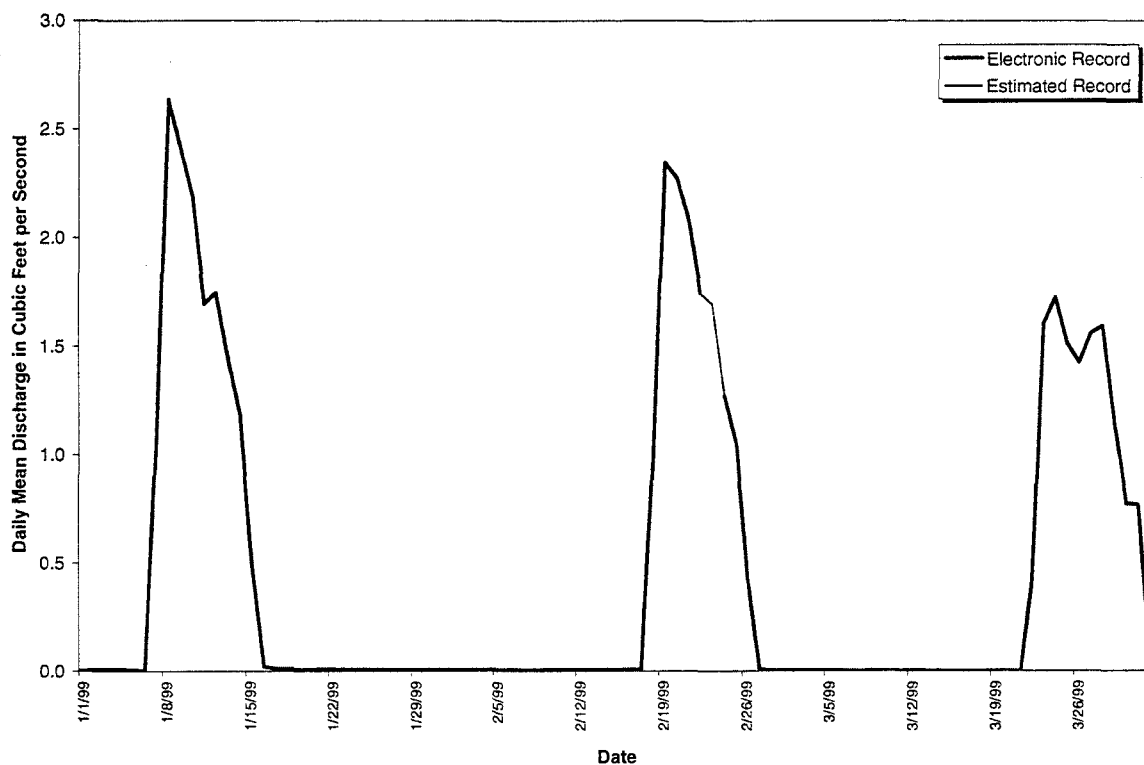


Figure 4-2. Mean Daily Discharge at Gaging Station GS03, Water Year 1999
(January, February, and March)

Table 4-3. Gaging Station GS08: Mean Daily Discharge (cubic feet per second)

Day	January-99	February-99	March-99
1	0.000	0.000	0.000
2	0.000	0.000	0.000
3	0.000	0.000	0.000
4	0.000	0.000	0.000
5	0.000	0.000	0.000
6	0.000	0.000	0.000
7	0.000	0.000	0.000
8	0.000	0.000	0.000
9	0.000	0.000	0.000
10	0.000	0.000	0.000
11	0.000	0.000	0.000
12	0.000	0.000	0.000
13	0.000	0.000	0.000
14	0.000	0.000	0.000
15	0.000	0.000	0.000
16	0.000	0.000	0.000
17	0.000	0.000	0.000
18	0.000	0.000	0.000
19	0.000	0.000	0.000
20	0.000	0.000	0.000
21	0.000	0.000	0.000
22	0.000	0.000	1.110
23	0.000	0.000	2.289
24	0.000	0.000	2.337
25	0.000	0.000	1.999
26	0.000	0.000	1.968
27	0.000	0.000	2.066
28	0.000	0.000	2.119
29	0.000	NA	1.416
30	0.000	NA	1.081
31	0.000	NA	1.052
Monthly Average (cfs)	0.000	0.000	0.563

Monthly Discharge

Cubic Feet	0	0	1506614
Gallons	0	0	11270253
Acre-Feet	0.00	0.00	34.59

Note: Mean flow values are reported to the nearest 0.001 cfs, values less than 0.0005 cfs are reported as zero.

Gaging Station GS08 is located 39° 53' 54"N, 105° 10' 48"W, at the Pond B-5 Outfall on South Walnut Creek (See Section 4 Map). This station is a RFCA Point of Compliance and monitors water discharged from Pond B-5 to South Walnut Creek. This station collects samples for selected radionuclides using continuous flow-paced sampling.

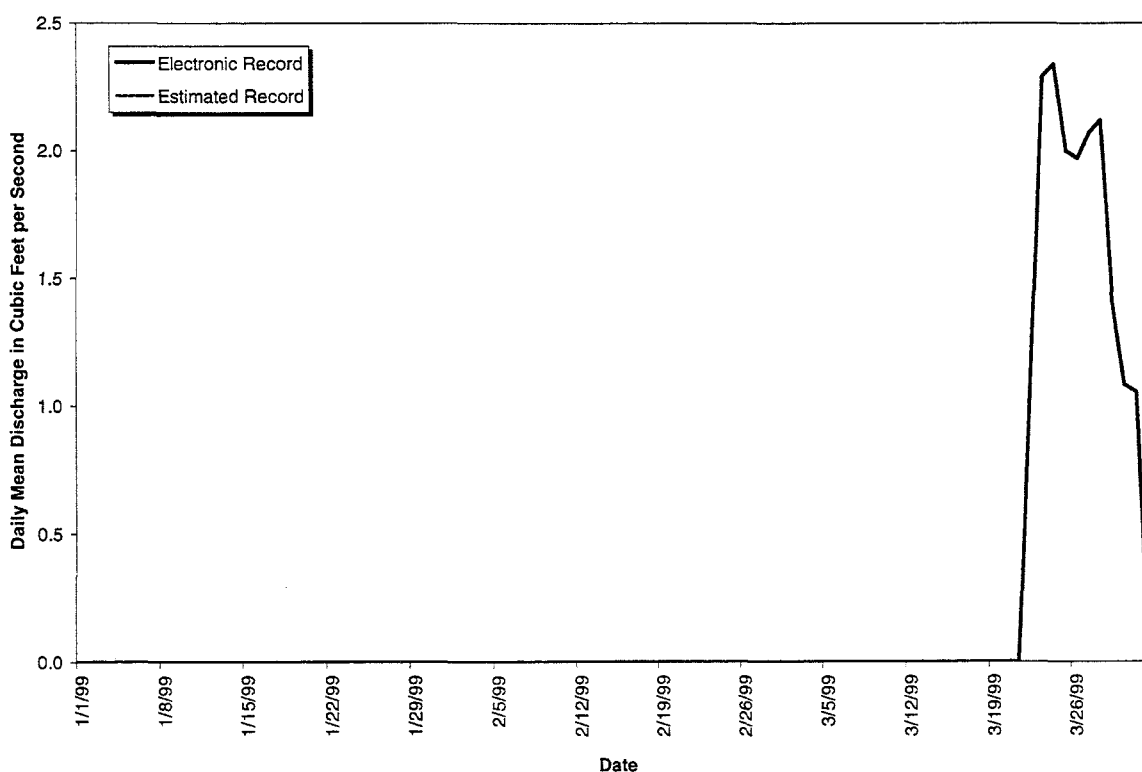


Figure 4-3. Mean Daily Discharge at Gaging Station GS08, Water Year 1999
(January, February, and March)

Table 4-4. Gaging Station GS10: Mean Daily Discharge (cubic feet per second)

Day	January-99	February-99	March-99
1	0.067	0.059	0.045
2	0.067	0.057a	0.044
3	0.064	0.073a	0.042
4	0.063	0.072a	0.046
5	0.061	0.069a	0.118
6	0.060	0.066a	0.058
7	0.055	0.060a	0.044
8	0.053	0.057a	0.042
9	0.052	0.055a	0.041
10	0.053	0.068a	0.040
11	0.059	0.081a	0.043
12	0.055	0.081a	0.137
13	0.054	0.077a	0.120
14	0.055	0.084a	0.058
15	0.054	0.092a	0.050
16	0.055	0.059a	0.048
17	0.053	0.053	0.047
18	0.054	0.050	0.048
19	0.054	0.051	0.049
20	0.055	0.048	0.051
21	0.056	0.048	0.053
22	0.125	0.049	0.054
23	0.141	0.047	0.055
24	0.073	0.047	0.055
25	0.067	0.048	0.057
26	0.068	0.047	0.060
27	0.060	0.046	0.059
28	0.060	0.045	0.059
29	0.058	NA	0.061
30	0.058	NA	0.063
31	0.058	NA	0.064
Monthly Average (cfs)	0.063	0.060	0.058

Monthly Discharge

Cubic Feet	169871	146017	156488
Gallons	1270727	1092287	1170608
Acre-Feet	3.90	3.35	3.59

Note: mean flow values are reported to the nearest 0.001 cfs, values less than 0.0005 cfs are reported as zero.

^a Contains data estimated from field observations and electronic record at adjacent or comparable gages.

Gaging Station GS10 is located 39° 53' 35"N, 105° 11' 27"W on South Walnut Creek above the Pond B-1 Bypass (See Section 4 Map). This station is a RFCA Action Level Framework and a New Source Detection Location and monitors water leaving the Site Industrial Area and entering the B-Series Ponds and South Walnut Creek. This station collects samples for selected radionuclides, metals, and water quality parameters using continuous flow-paced sampling.

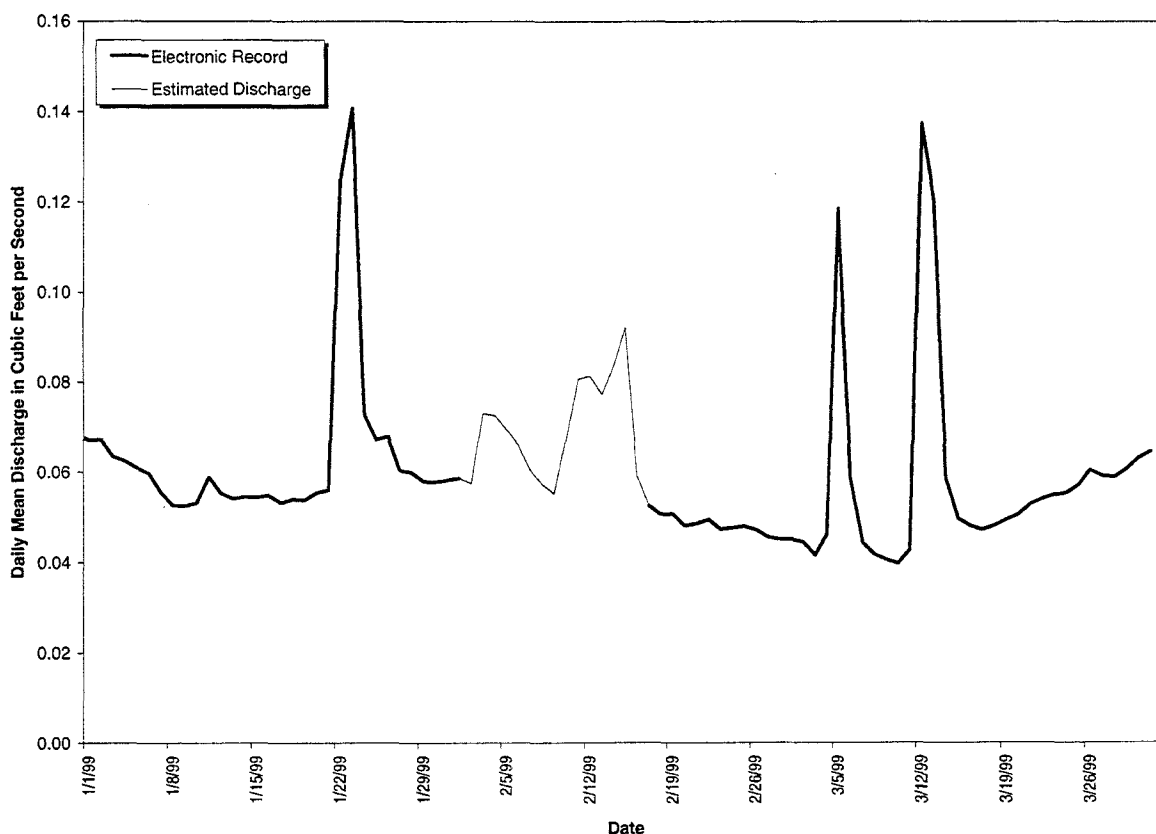


Figure 4-4. Mean Daily Discharge at Gaging Station GS10, Water Year 1999 (January, February, and March)

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Table 4-5. Gaging Station GS11: Mean Daily Discharge (cubic feet per second)

Day	January-99	February-99	March-99
1	0.000	0.000	0.000
2	0.000	0.000	0.000
3	0.000	0.000	0.000
4	0.000	0.000	0.000
5	0.000	0.000	0.000
6	0.000	0.000	0.000
7	1.875	0.000	0.000
8	3.051	0.000	0.000
9	2.875	0.000	0.000
10	2.587	0.000	0.000
11	2.004	0.000	0.000
12	1.959	0.000	0.000
13	1.593	0.000	0.000
14	1.331	0.000	0.000
15	0.353	0.000	0.000
16	0.000	0.000	0.000
17	0.000	0.000	0.000
18	0.000	1.679	0.000
19	0.000	2.733	0.000
20	0.000	2.547	0.000
21	0.000	2.256	0.000
22	0.000	2.083	0.000
23	0.000	1.955	0.000
24	0.000	1.522	0.000
25	0.000	1.161	0.000
26	0.000	0.289	0.000
27	0.000	0.000	0.000
28	0.000	0.000	0.000
29	0.000	NA	0.000
30	0.000	NA	0.000
31	0.000	NA	0.000
Monthly Average (cfs)	0.569	0.579	0.000

Monthly Discharge

Cubic Feet	1523006	1401841	0
Gallons	11392878	10486501	0
Acre-Feet	34.96	32.18	0.00

Note: Mean flow values are reported to the nearest 0.001 cfs, values less than 0.0005 cfs are reported as zero.

Gaging Station GS11 is located 39° 54' 3"N, 105° 10' 47"W, at the Pond A-4 Outfall on North Walnut Creek (See Section 4 Map). This station is a RFCA Point of Compliance and monitors water discharged from Pond A-4 to North Walnut Creek. This station collects samples for selected radionuclides using continuous flow-paced sampling.

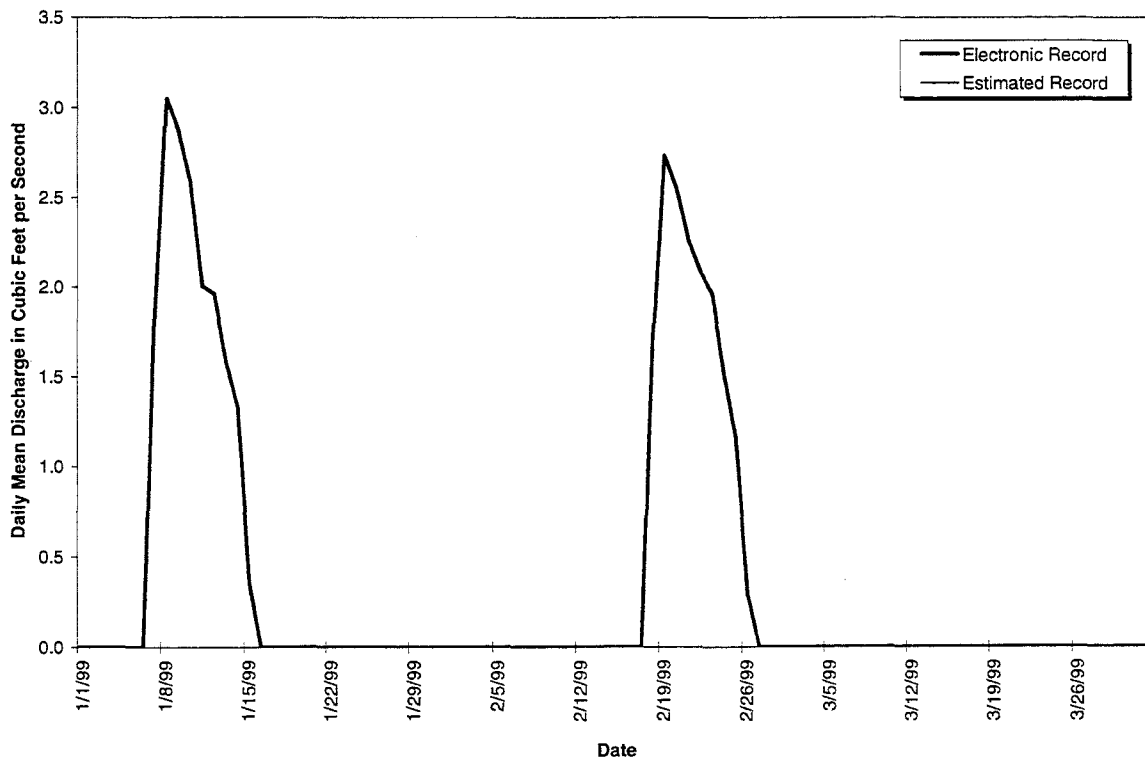


Figure 4-5. Mean Daily Discharge at Gaging Station GS11 Water Year 1999
(January, February, and March)

Table 4-6. Gaging Station GS27: Mean Daily Discharge (cubic feet per second)

Day	January-99	February-99	March-99
1	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000a
3	0.0000	0.0000	0.0000a
4	0.0000	0.0000	0.0000a
5	0.0000	0.0000	0.0001
6	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000
9	0.0000	0.0000	0.0000
10	0.0000	0.0000	0.0000
11	0.0000	0.0000	0.0000
12	0.0000	0.0000	0.0002
13	0.0000	0.0000	0.0004a
14	0.0000	0.0000	0.0000
15	0.0000	0.0000	0.0000
16	0.0000	0.0000	0.0000
17	0.0000	0.0000	0.0000
18	0.0000	0.0000	0.0000
19	0.0000	0.0000	0.0000
20	0.0000	0.0000	0.0000
21	0.0000	0.0000	0.0000
22	0.0000	0.0000	0.0000
23	0.0004	0.0000	0.0000
24	0.0000	0.0000	0.0000
25	0.0000	0.0000	0.0000
26	0.0000	0.0000	0.0000
27	0.0000	0.0000	0.0000
28	0.0000	0.0000	0.0000
29	0.0000	NA	0.0000
30	0.0000	NA	0.0000
31	0.0000	NA	0.0000
Monthly Average (cfs)	0.000	0.000	0.000

Monthly Discharge

Cubic Feet	33	0	55
Gallons	247	0	412
Acre-Feet	0.001	0.000	0.001

Note: mean flow values are reported to the nearest 0.001 cfs, values less than 0.0005 cfs are reported as zero.

^a Contains data estimated from field observations and electronic record at adjacent or comparable gages.

Gaging Station GS27 is located at State Plane 2080529; 751216, at the small drainage ditch NW of Building 884 (see Section 4 Map). This location is a Performance and Best Management Practices Monitoring Location and monitors water draining from the Building 889 area. This station collects samples for selected radionuclides using continuous, flow-paced sampling.

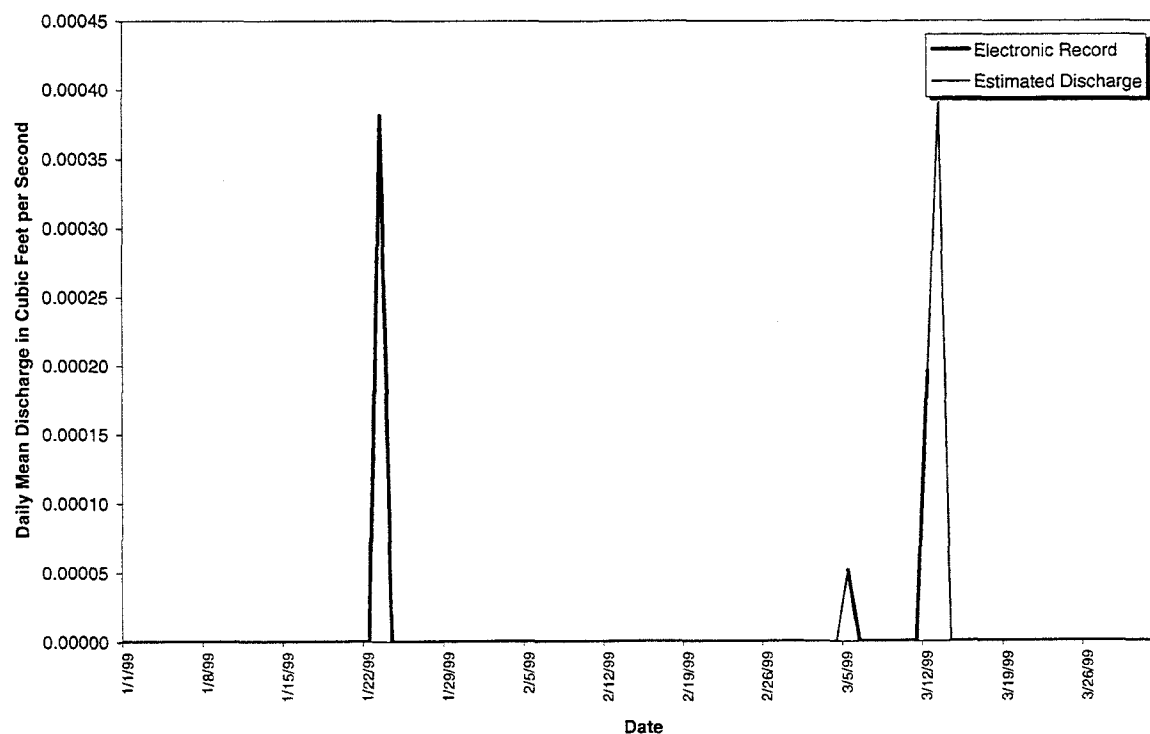


Figure 4-6. Mean Daily Discharge at Gaging Station GS27 Water Year 1999 (January, February, and March)

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Table 4-7. Gaging Station GS31: Mean Daily Discharge (cubic feet per second)

Day	January-99	February-99	March-99
1	0.000	0.000	0.000
2	0.000	0.000	0.000
3	0.000	0.000	0.000
4	0.000	0.000	0.000
5	0.000	0.000	0.000
6	0.000	0.000	0.000
7	0.000	0.000	0.000
8	0.000	0.000	0.000
9	0.000	0.000	0.000
10	0.000	0.000	0.000
11	0.000	0.000	0.000
12	0.000	0.000	0.000
13	0.000	0.000	0.000
14	0.000	0.000	0.000
15	0.000	0.000	0.000
16	0.000	0.000	0.000
17	0.000	0.000	0.000
18	0.000	0.000	0.000
19	0.000	0.000	0.000
20	0.000	0.000	0.000
21	0.000	0.000	0.000
22	0.000	0.000	0.000
23	0.000	0.000	0.000
24	0.000	0.000	0.000
25	0.000	0.000	0.000
26	0.000	0.000	0.000
27	0.000	0.000	0.000
28	0.000	0.000	0.000
29	0.000	NA	0.000
30	0.000	NA	0.000
31	0.000	NA	0.000
Monthly Average (cfs)	0.000	0.000	0.000

Monthly Discharge

Cubic Feet	0	0	0
Gallons	0	0	0
Acre-Feet	0.00	0.00	0.00

Note: Mean flow values are reported to the nearest 0.001 cfs, values less than 0.0005 cfs are reported as zero.

Gaging Station GS31 is located at State Plane 2089268: 747506, at the Pond C-2 Outfall (See Section 4 Map). This station is a RFCA Point of Compliance and monitors water discharged from Pond C-2. This station collects samples for selected radionuclides using continuous flow-paced sampling.

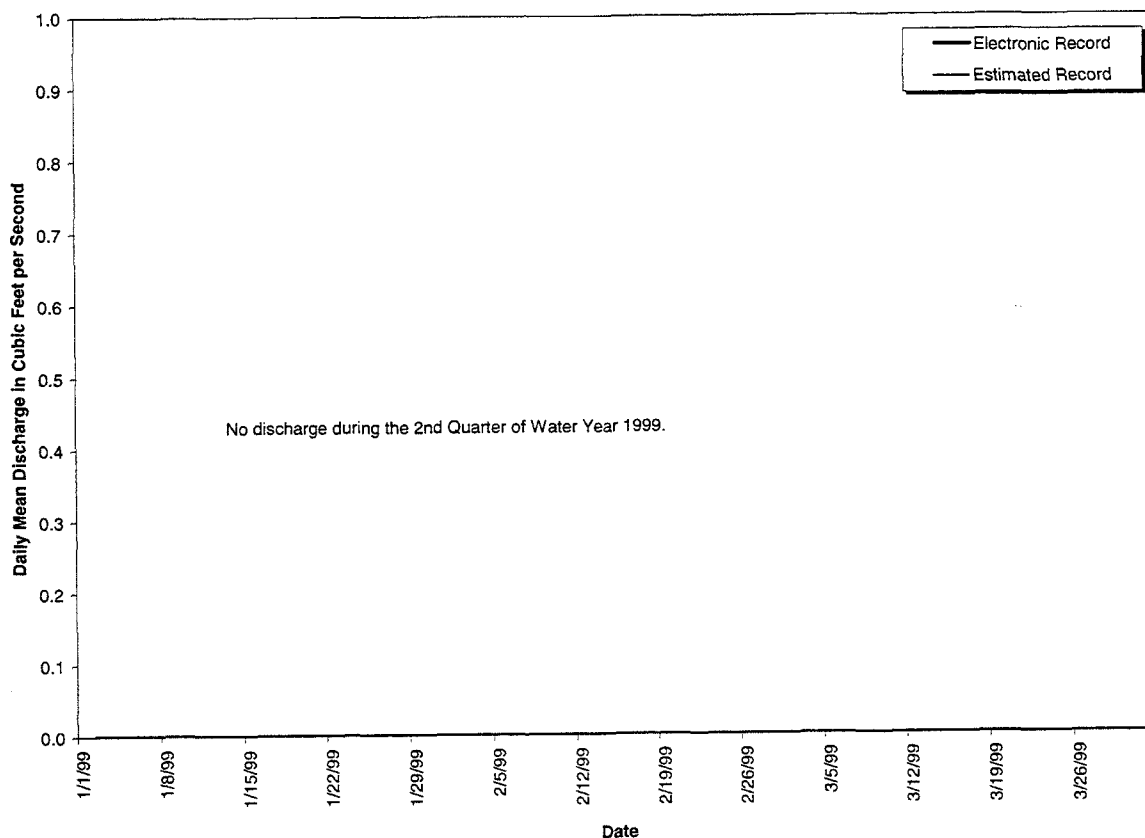


Figure 4-7. Mean Daily Discharge at Gaging Station GS31 Water Year 1999
(January, February, and March)

Table 4-8. Gaging Station GS39: Mean Daily Discharge (cubic feet per second)

Day	January-99	February-99	March-99
1	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0012a
6	0.0000	0.0000	0.0002a
7	0.0000	0.0000	0.0000a
8	0.0000a	0.0000	0.0000
9	0.0000a	0.0000	0.0000
10	0.0000	0.0000	0.0000
11	0.0000	0.0000a	0.0000
12	0.0000	0.0000a	0.0005
13	0.0000	0.0000	0.0038a
14	0.0000	0.0000	0.0000
15	0.0000	0.0000	0.0000
16	0.0000	0.0000a	0.0000
17	0.0000	0.0000	0.0000
18	0.0000	0.0000	0.0000
19	0.0000	0.0000	0.0000
20	0.0000	0.0000	0.0000
21	0.0000	0.0000	0.0000
22	0.0000	0.0000	0.0000
23	0.0025	0.0000a	0.0000
24	0.0000	0.0000	0.0000
25	0.0000a	0.0000	0.0000
26	0.0000	0.0000	0.0000
27	0.0000	0.0000	0.0000
28	0.0000	0.0000	0.0000
29	0.0000	NA	0.0000
30	0.0000	NA	0.0000
31	0.0000	NA	0.0000
Monthly Average (cfs)	0.000	0.000	0.000

Monthly Discharge

Cubic Feet	218	0	495
Gallons	1633	0	3701
Acre-Feet	0.01	0.00	0.01

Note: Mean flow values are reported to the nearest 0.001 cfs, values less than 0.0005 cfs are reported as zero.

^a Contains data estimated from field observations and electronic record at adjacent or comparable gages.

Gaging Station GS39 is located in the drainage ditch northwest of the 904 Pad. This location is a RFCA Source Location station monitoring water flowing from the area of the 903 Pad as well as part of the 904 Pad and contractor yard to South Walnut Creek. This station collects samples for selected radionuclides using continuous, flow-paced sampling.

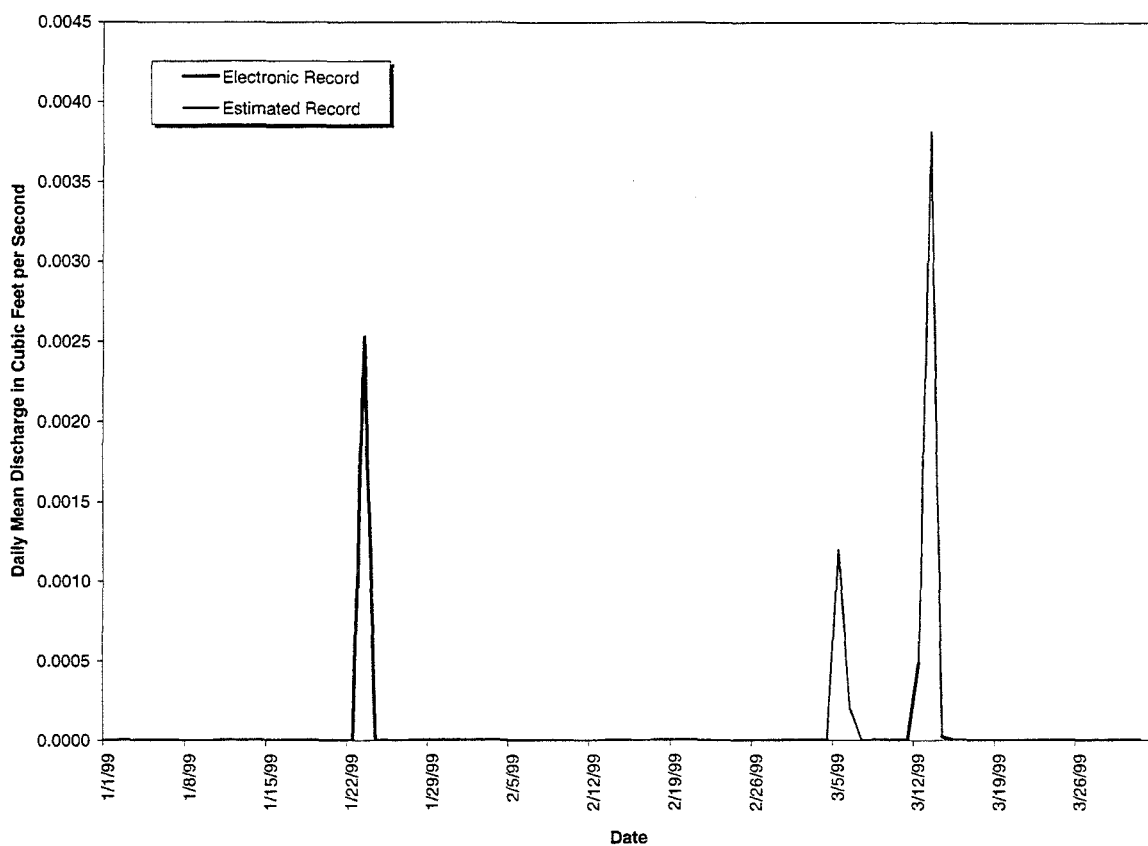


Figure 4-8. Mean Daily Discharge at Gaging Station GS39 Water Year 1999 (January, February, and March)

Table 4-9. Gaging Station GS40: Mean Daily Discharge (cubic feet per second)

Day	January-99	February-99	March-99
1	0.024	0.022	0.022
2	0.030	0.019	0.024
3	0.031a	0.018	0.025
4	0.030	0.020	0.037
5	0.033	0.021	0.094
6	0.031	0.020	0.044
7	0.025	0.021	0.027
8	0.023	0.019	0.026
9	0.021	0.021	0.024
10	0.021	0.033	0.023
11	0.024	0.039	0.025
12	0.021	0.036	0.100
13	0.021	0.027	0.085
14	0.019	0.026	0.037
15	0.019	0.021	0.027
16	0.021	0.021	0.024
17	0.019	0.021	0.022
18	0.018	0.020	0.021
19	0.019	0.020	0.019
20	0.019	0.020	0.019
21	0.020	0.021	0.020
22	0.086	0.019	0.019
23	0.089	0.019	0.021
24	0.030	0.019	0.022
25	0.030	0.021	0.022
26	0.027	0.020	0.022
27	0.022	0.020	0.022
28	0.023	0.021	0.021
29	0.022	NA	0.022
30	0.021	NA	0.023
31	0.021	NA	0.024
Monthly Average (cfs)	0.028	0.022	0.031

Monthly Discharge

Cubic Feet	74029	54148	83089
Gallons	553778	405053	621549
Acre-Feet	1.70	1.24	1.91

Note: Mean flow values are reported to the nearest 0.001 cfs, values less than 0.0005 cfs are reported as zero.

^a Contains data estimated from field observations and electronic record at adjacent or comparable gages.

Gaging Station GS40 is located on the concrete spillway east of Tenth Street, south of Building 997. This location is a RFCA Performance Monitoring Location monitoring water flowing from the 700 area to South Walnut Creek. This station samples for selected radionuclides using continuous, flow-paced sampling.

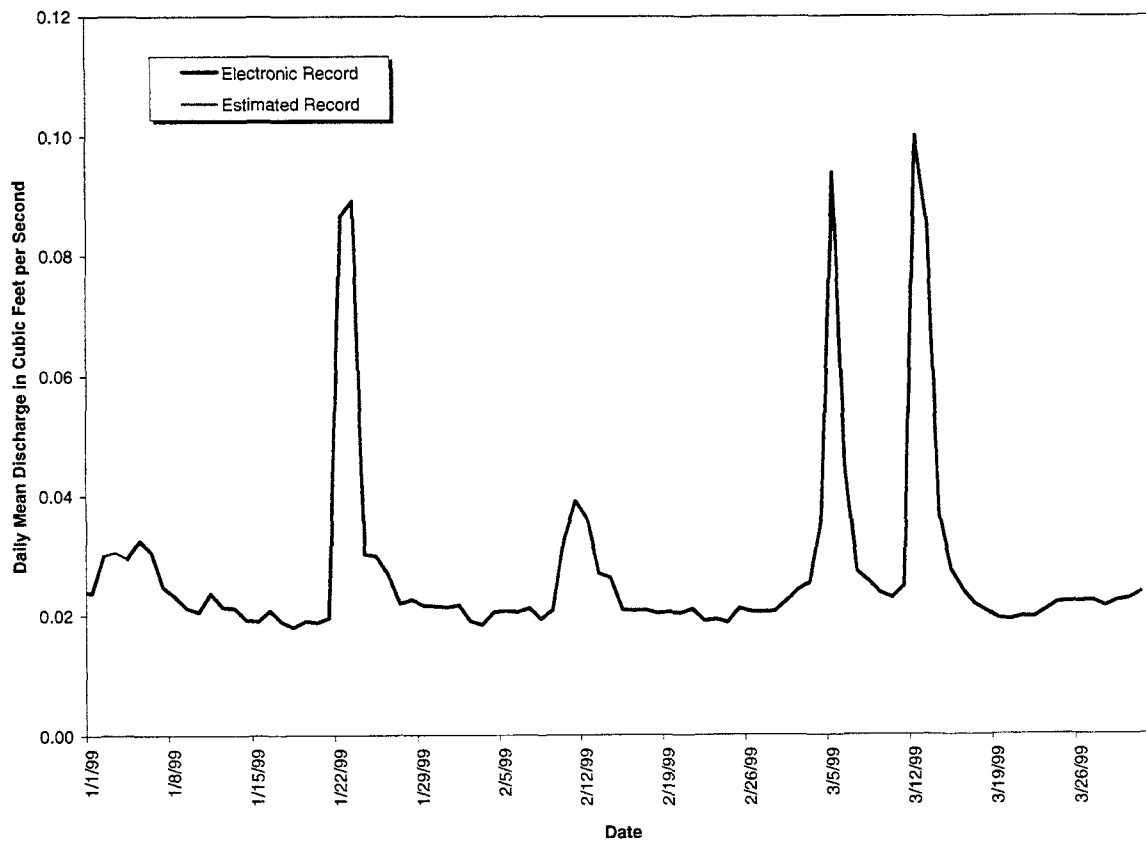


Figure 4-9. Mean Daily discharge at Gaging Station GS40 Water Year 1999 (January, February, and March)

Table 4-10. Gaging Station SW022: Mean Daily Discharge (cubic feet per second)

Day	January-99	February-99	March-99
1	0.000	0.000	0.000
2	0.000	0.000	0.000
3	0.000	0.000	0.000
4	0.000	0.000	0.000
5	0.000	0.000	0.000
6	0.000	0.000	0.000
7	0.000	0.000	0.000
8	0.000	0.000	0.000
9	0.000	0.000	0.000
10	0.000	0.000	0.000
11	0.000	Bad data	0.000
12	0.000	Bad data	0.012a
13	0.000	0.000	0.000a
14	0.000	0.000	0.000
15	0.000	0.000	0.000
16	0.000	0.000	0.000
17	0.000	0.000	0.000
18	0.000	0.000	0.000
19	0.000	0.000	0.000
20	0.000	0.000	0.000
21	0.000	0.000	0.000
22	0.000	0.000	0.000
23	0.007	0.000	0.000
24	0.000	0.000	0.000
25	0.000	0.000	0.000
26	0.000	0.000	0.000
27	0.000	0.000	0.000
28	0.000	0.000	0.000
29	0.000	NA	0.000
30	0.000	NA	0.000
31	0.000	NA	0.000
Monthly Average (cfs)	0.000	0.000	0.000

Monthly Discharge

Cubic Feet	629	0	1059
Gallons	4704	0	7924
Acre-Feet	0.01	0.00	0.02

Note: Mean flow values are reported to the nearest 0.001 cfs, values less than 0.0005 cfs are reported as zero.

^a Contains data estimated from field observations and electronic record at adjacent or comparable gages.

Gaging Station SW022 is located 39° 53' 30"N, 105° 11' 30"W, at the Central Avenue Ditch at the Inner East Gate (See Section 4 Map). This location is a RFCA New Source Detection Location and monitors water in the Central Avenue Ditch entering the B-Series Ponds and South Walnut Creek. Storm event samples are collected for selected radionuclides.

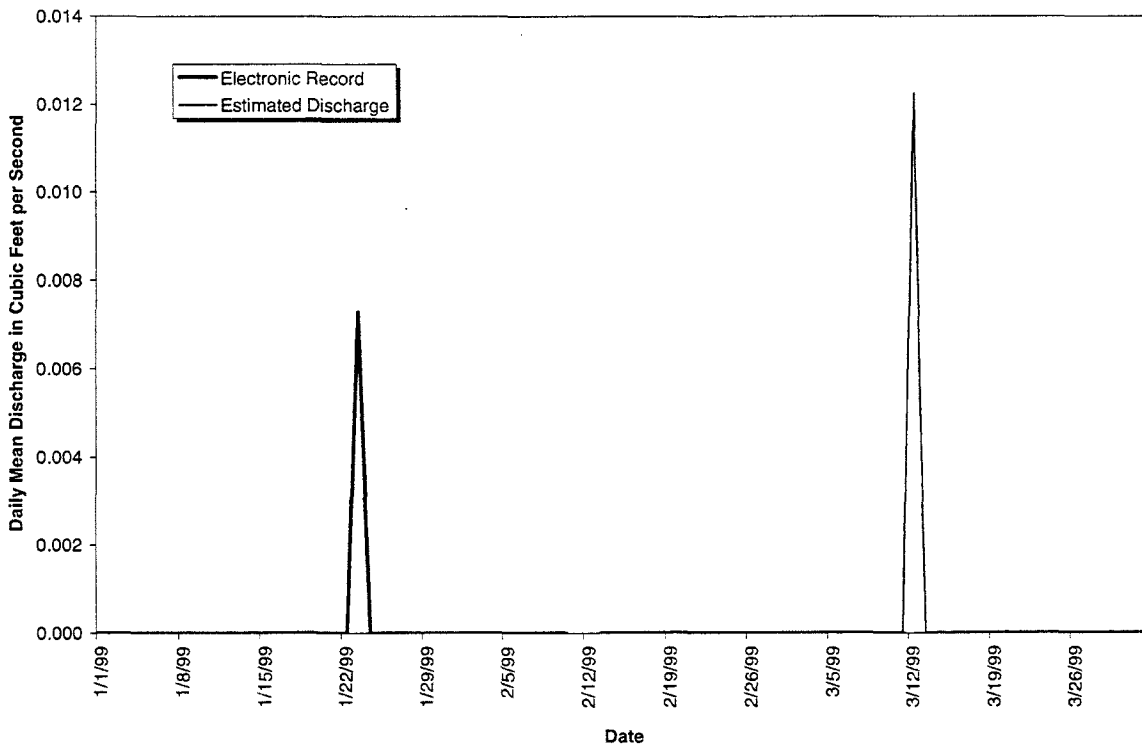


Figure 4-10. Mean Daily Discharge at Gaging Station SW022, Water Year 1999 (January, February, and March)

Table 4-11. Gaging Station SW027: Mean Daily Discharge (cubic feet per second)

Day	January-99	February-99	March-99
1	0.000	0.000	0.000
2	0.000	0.000	0.000
3	0.000	0.000	0.000
4	0.000	0.000	0.000
5	0.000	0.000	0.000
6	0.000	0.000	0.000
7	0.000	0.000	0.000
8	0.000	0.000	0.000
9	0.000	0.000	0.000
10	0.000	0.000	0.000
11	0.000	0.000	0.000
12	0.000	0.000	0.000
13	0.000	0.000	0.000
14	0.000	0.000	0.004
15	0.000	0.000	0.002
16	0.000	0.000	0.001
17	0.000	0.000	0.000
18	0.000	0.000	0.000
19	0.000	0.000	0.000
20	0.000	0.000	0.000
21	0.000	0.000	0.000
22	0.000	0.000	0.000
23	0.000	0.000	0.000
24	0.000	0.000	0.000
25	0.000	0.000	0.000
26	0.000	0.000	0.000
27	0.000	0.000	0.000
28	0.000	0.000	0.000
29	0.000	NA	0.000
30	0.000	NA	0.000
31	0.000	NA	0.000
Monthly Average (cfs)	0.000	0.000	0.000

Monthly Discharge

Cubic Feet	0	0	564
Gallons	0	0	4216
Acre-Feet	0.00	0.00	0.01

Note: Mean flow values are reported to the nearest 0.001 cfs, values less than 0.0005 cfs are reported as zero.

Gaging Station SW027 is located 39° 53' 12" N, 105° 11' 4" W, at the South Interceptor Ditch above Pond C-2 (See Section 4 Map). This station is a RFCA Action Level Framework and a New Source Detection Location and monitors water in the South Interceptor Ditch entering Pond C-2. This station collects samples for selected radionuclides, metals, and water quality parameters using continuous flow-paced sampling.

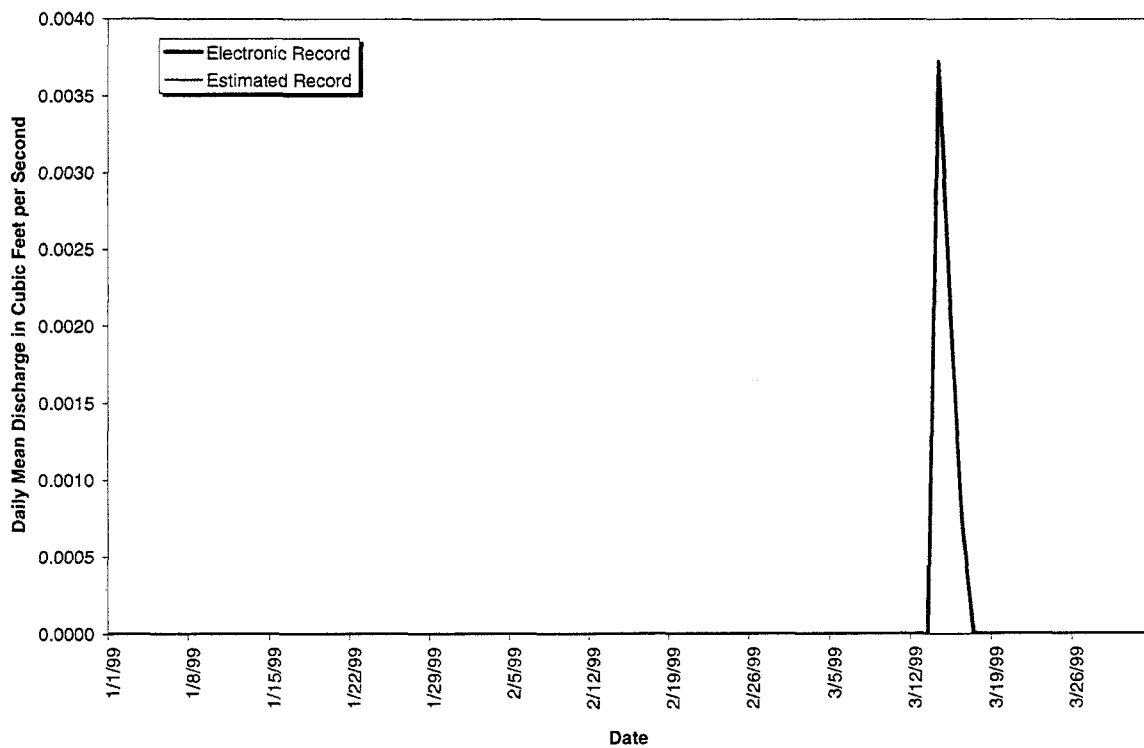


Figure 4-11. Mean Daily Discharge at Gaging Station SW027, Water Year 1999 (January, February, and March)

Table 4-12. Gaging Station SW091: Mean Daily Discharge (cubic feet per second)

Day	January-99	February-99	March-99
1	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000
9	0.0000	0.0000	0.0000
10	0.0000	0.0000	0.0000
11	0.0000	0.0000	0.0000
12	0.0000	0.0000	0.0000
13	0.0000	0.0000	0.0000
14	0.0000	0.0000	0.0000
15	0.0000	0.0000	0.0000
16	0.0000	0.0000	0.0000
17	0.0000	0.0000	0.0000
18	0.0000	0.0000	0.0000
19	0.0000	0.0000	0.0000
20	0.0000	0.0000	0.0000
21	0.0000	0.0000	0.0000
22	0.0000	0.0000	0.0000
23	0.0000	0.0000	0.0000
24	0.0000	0.0000	0.0000
25	0.0000	0.0000	0.0000
26	0.0000	0.0000	0.0000
27	0.0000	0.0000	0.0000
28	0.0000	0.0000	0.0000
29	0.0000	NA	0.0000
30	0.0000	NA	0.0000
31	0.0000	NA	0.0000
Monthly Average (cfs)	0.0000	0.0000	0.0000

Monthly Discharge

Cubic Feet	0	0	0
Gallons	0	0	0
Acre-Feet	0.00	0.00	0.00

Note: Mean flow values are reported to the nearest 0.001 cfs, values less than 0.0005 cfs are reported as zero.

^a Contains data estimated from field observations and electronic record at adjacent or comparable gages.

Gaging Station SW091 is located at State Plane 2086064; 751322, along the drainage NE of the Solar Ponds draining to the A-Series Ponds (See Section 4 Map). This location is a RFCA New Source Detection Location and monitors water draining from the area NE of the Solar Ponds. Storm event samples are collected for selected radionuclides.

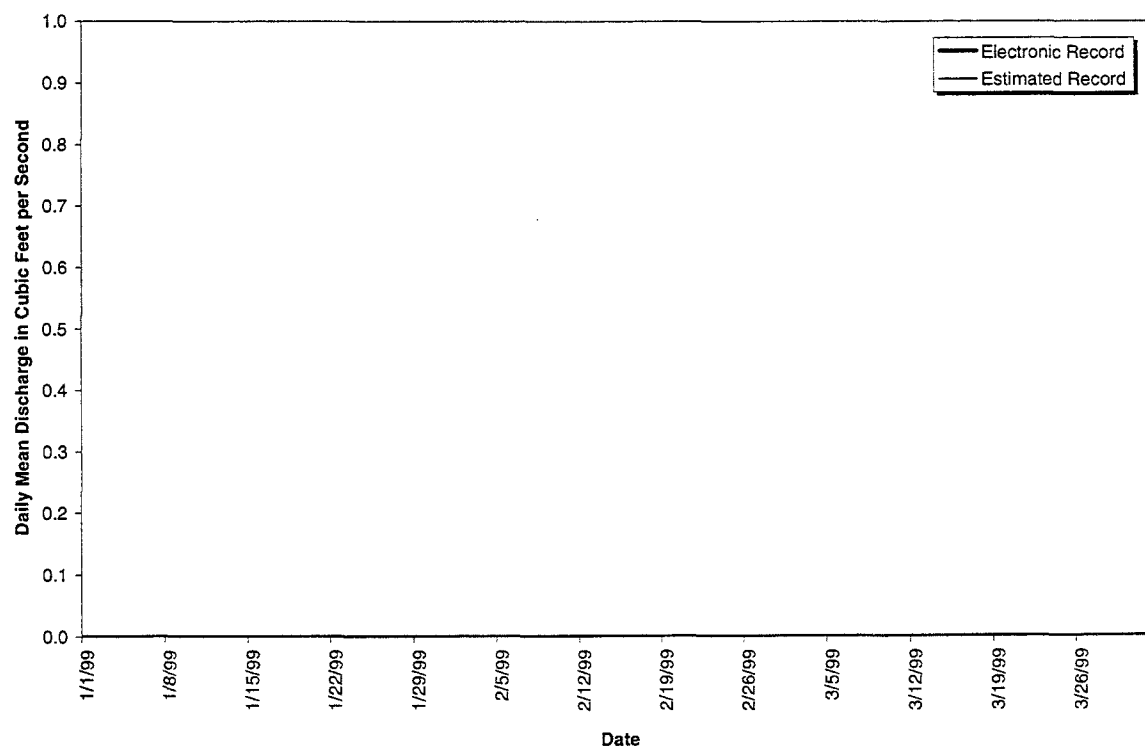


Figure 4-12. Mean Daily Discharge at Gaging Station SW091, Water Year 1999 (January, February, and March)

Table 4-13. Gaging Station SW093: Mean Daily Discharge (cubic feet per second)

Day	January-99	February-99	March-99
1	0.080	0.066	0.057
2	0.065	0.055	0.060
3	0.062	0.057	0.059
4	0.056	0.062	0.066
5	0.064	0.065	0.162
6	0.087	0.062	0.091
7	0.100	0.064	0.080
8	0.081	0.058	0.080
9	0.068	0.058	0.074
10	0.066	0.061	0.064
11	0.076	0.078	0.060
12	0.068	0.070	0.159
13	0.059	0.068	0.138
14	0.054	0.072	0.096
15	0.061	0.072	0.084
16	0.069	0.067	0.074
17	0.067	0.069	0.062
18	0.067	0.068	0.059
19	0.074	0.069	0.062
20	0.074	0.068	0.059
21	0.076	0.069	0.059
22	0.134	0.060	0.054
23	0.182	0.056	0.056
24	0.123	0.062	0.057
25	0.099	0.061	0.058
26	0.096	0.057	0.060
27	0.085	0.054	0.063
28	0.078	0.054	0.058
29	0.072	NA	0.061
30	0.074	NA	0.067
31	0.072	NA	0.066
Monthly Average (cfs)	0.080	0.064	0.074

Monthly Discharge

Cubic Feet	215307	153906	199302
Gallons	1610610	1151295	1490880
Acre-Feet	4.94	3.53	4.57

Note: Mean flow values are reported to the nearest 0.001 cfs, values less than 0.0005 cfs are reported as zero.

Gaging Station SW093 is located 39° 53' 51"N, 105° 11' 48"W, along North Walnut Creek at the 72" culvert 1000 feet above the Pond A-1 Bypass (See Section 4 Map). This station is a RFCA Action Level Framework and a New Source Detection Location and monitors water leaving the Site Industrial Area and entering the A-Series Ponds and North Walnut Creek. This station collects samples for selected radionuclides, metals, and water quality parameters using continuous flow-paced sampling.

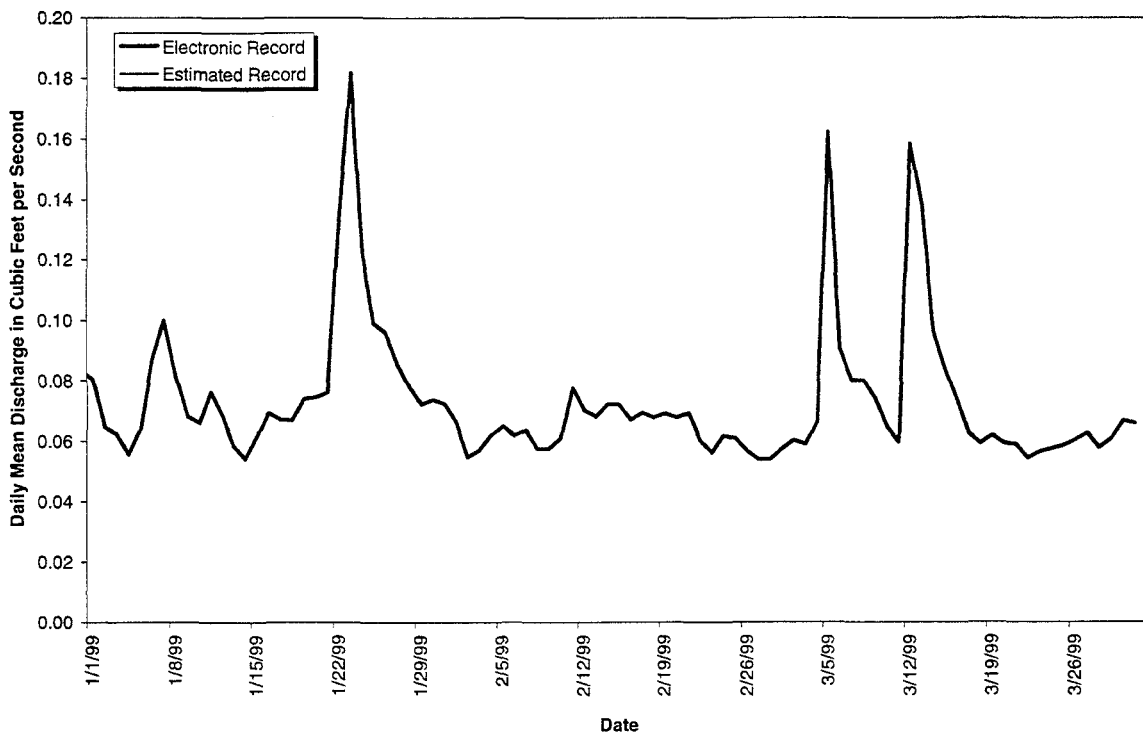


Figure 4-13. Mean Daily Discharge at Gaging Station SW093, Water Year 1999
(January, February, and March)

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4.2 WATER QUALITY DATA

Table 4-14. Radionuclides, Water Year 1999 (January, February, and March)

Location	Sample Dates	Analyte	Analyte	Analyte	Analyte
		Pu-239, -240 [pCi/L]	Am-241 [pCi/L]	Total Uranium [pCi/L]	Tritium [pCi/L]
GS01	11/16 - 11/25/98	-0.005	-0.012	a	480
GS01	11/25 - 12/10/98	0.003	0.003	a	20
GS01	12/10 - 12/26/98	0.007	0.008	a	50
GS01	12/26/98 - 1/4/99	0.002	0.009	a	20
GS01	1/4 - 1/13/99	0.011	0.025	a	-152
GS01	1/13 - 1/28/99	0.006	0.008	a	-120
GS01	1/28 - 2/17/99	-0.001	-0.012	a	-60
GS01	2/17 - 3/3/99	-0.002	-0.007	a	-132
GS01	3/3 - 3/24/99	c	c	a	c
GS01	3/24 - 4/13/99	c	c	a	185
GS03	12/8/98 - 1/7/99	b	b	a	b
GS03	1/7 - 1/11/99	0.011	0.011	a	-122
GS03	1/11 - 1/16/99	0.003	0.005	a	-60
GS03	1/16 - 2/18/99	-0.001	0.024	a	-30
GS03	2/18 - 2/21/99	0.004	0.007	a	0
GS03	2/21 - 2/26/99	-0.004	0.024	a	-57
GS03	2/26 - 3/22/99	b	b	a	b
GS03	3/22 - 3/25/99	0.007	0.003	a	-347
GS03	3/25 - 3/29/99	0.011	-0.003	a	-300
GS03	3/29 - 4/5/99	0.002	0.017	a	150
GS08	3/22 - 3/25/99	c	c	c	a
GS08	3/25 - 3/29/99	c	c	c	a
GS08	3/29 - 4/5/99	0.005	0.013	1.559	a
GS10	1/4 - 1/29/99	0.032	0.038	3.420	a
GS10	1/29 - 2/16/99	0.001	0.004	3.996	a
GS10	2/16 - 3/3/99	0.011	0.013	3.972	a
GS10	3/3 - 3/15/99	0.016	0.084	2.930	a
GS10	3/15 - 3/30/99	c	c	c	a
GS10	3/30 - 4/15/99	c	c	c	a

- a Not applicable
b Non-sufficient quantity
c Incomplete laboratory analysis

Table 4-14. Radionuclides, Water Year 1999 (January, February, and March), continued

Location	Sample Dates	Analyte Pu-239, -240 [pCi/L]	Analyte Am-241 [pCi/L]	Analyte Total Uranium [pCi/L]	Analyte Tritium [pCi/L]
GS11	1/7 - 1/11/99	-0.001	-0.008	1.642	a
GS11	1/11 - 1/15/99	-0.003	-0.028	2.004	a
GS11	2/18 - 2/21/99	0.004	-0.005	1.629	a
GS11	2/21 - 2/26/99	-0.003	-0.006	2.298	a
GS27	1/23/99	1.300	0.324	0.277	a
GS27	3/5/99	0.731	0.266	0.089	a
GS27	3/12/99	0.905	0.232	0.136	a
GS32	2/11/99	0.124	0.143	1.356	a
GS39	11/12/98 - 4/15/99	b	b	a	a
GS40	12/15/98 - 2/8/99	0.016	0.006	a	a
GS40	2/8 - 3/30/99	b	b	a	a
GS40	3/30 - 4/20/99	b	b	a	a
SW027	11/10/98 - 4/15/99	b	b	b	a
SW093	12/17/98 - 1/7/99	-0.001	0.014	4.020	a
SW093	1/7 - 1/19/99	-0.001	0.006	4.639	a
SW093	1/19 - 1/29/99	0.013	-0.005	3.417	a
SW093	1/29 - 2/22/99	-0.001	-0.076	4.341	a
SW093	2/22 - 3/9/99	0.007	0.081	3.864	a
SW093	3/9 - 3/16/99	0.003	0.016	3.315	a
SW093	3/16 - 3/30/99	b	b	b	a
SW093	3/30 - 4/15/99	b	b	b	a

a Not applicable
b Incomplete laboratory analysis

Table 4-15. Metals, Water Year 1999 (January, February, and March)

Location	Sample Dates	Analyte Be ug/L	Analyte Dissolved Cd ug/L	Analyte Cr ug/L	Analyte Dissolved Ag ug/L
GS10	12/1/98 - 1/4/99	a	a	a	a
GS10	1/4 - 1/29/99	0.05	undetect	1.4	undetect
GS10	1/29 - 2/16/99	undetect	undetect	undetect	0.22
GS10	2/16 - 3/3/99	undetect	undetect	0.48	undetect
GS10	3/3 - 3/15/99	0.06	undetect	2.1	undetect
GS10	3/15 - 3/30/99	a	a	a	a
GS10	3/30 - 4/15/99	a	a	a	a
SW027	11/10/98 - 4/15/99	a	a	a	a
SW093	12/2 - 12/17/98	undetect	undetect	undetect	undetect
SW093	12/17/98 - 1/7/99	undetect	0.04	undetect	undetect
SW093	1/7 - 1/19/99	0.01	0.07	undetect	0.09
SW093	1/19 - 1/29/99	0.03	undetect	0.68	undetect
SW093	1/29 - 2/22/99	undetect	undetect	undetect	0.07
SW093	2/22 - 3/9/99	0.04	undetect	0.93	undetect
SW093	3/9 - 3/16/99	0.04	undetect	1.9	undetect
SW093	3/16 - 3/30/99	a	a	a	a
SW093	3/30 - 4/15/99	a	a	a	a

a Incomplete laboratory analysis

Table 4-16. Other Metals Water Year 1999 (January, February, and March)

Analyte ug/l	Result GS32, 2/11/99
Aluminum	3330
Antimony	0.455
Arsenic	3.7
Barium	70.45
Beryllium	0.15
Cadmium	0.37
Calcium	26800
Chromium	5.8
Cobalt	0.94
Copper	13.95
Iron	2820
Lead	4.05
Lithium	9.7
Magnesium	3985
Manganese	50.95
Mercury	<0.05
Molybdenum	2.35
Nickel	4.6
Potassium	8765
Selenium	1.3
Silver	<0.11
Sodium	188000
Strontium	152.5
Thallium	<0.78
Tin	<0.3
Vanadium	8.7
Zinc	702

60

Table 4-17. Water Quality Parameters, Water Year 1999 (January, February, and March)

Location	Sample Dates	Analyte Hardness mg/L
GS10	12/1/98 - 1/4/99	170
GS10	1/4 - 1/29/99	210
GS10	1/29 - 2/16/99	230
GS10	2/16 - 3/3/99	220
GS10	3/3 - 3/15/99	180
GS10	3/15 - 3/30/99	230
GS10	3/30 - 4/15/99	a
SW027	11/10/98 - 4/15/99	a
SW093	12/17/98 - 1/7/99	290
SW093	1/7 - 1/19/99	340
SW093	1/19 - 1/29/99	300
SW093	1/29 - 2/22/99	320
SW093	2/22 - 3/9/99	280
SW093	3/9 - 3/16/99	260
SW093	3/16 - 3/30/99	300
SW093	3/30 - 4/15/99	a

a Incomplete laboratory analysis

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5. INCIDENTAL WATERS

5.1 INCIDENTAL WATERS DEFINITION AND ROUTING MATRIX

An incidental water is defined as precipitation, surface water, groundwater, utility water, process water, or waste water collecting in one or more of several types of containments. These containments can include excavation sites, foundation drains, secondary containment berms, electrical vaults, utility pits and manholes, or other natural or manmade depressions, which must be dewatered.

Water collected in this manner has the potential to become contaminated via contact with the surrounding containment material. Sampling and disposition of incidental waters is conducted per Site Procedure 1-C91-EPR-SW.01, *Control and Disposition of Incidental Waters*. Incidental waters are typically sampled for pH, nitrates, conductivity, and gross alpha and gross beta (when radionuclides are suspected). Additional testing for volatile organic compounds and metals is performed when a specific potential contaminant source is known to exist. Disposition depends on the analytical results. Routing options for incidental waters are outlined in the following table.

Table 5-1. Incidental Waters Routing Matrix

Incidental Water Routing	Routing Criteria	Treatment Processes
Ground/Storm Drain	<ul style="list-style-type: none"> Water meets discharge limits per Incidental Waters procedure 	N/A
Building 995 Waste Water Treatment Plant (WWTP)	<ul style="list-style-type: none"> Water above discharge to ground limits Water meets Internal Waste Streams Program review criteria 	Activated Sludge w/ tertiary clarifiers Dual media filtration UV disinfection
Building 891 Consolidated Water Treatment Facility (CWTF)	<ul style="list-style-type: none"> Water above discharge to ground limits Water not accepted by WWTP Water meets CWTF acceptance criteria and has both radionuclide and organic constituents 	Chemical precipitation Microfiltration UV/ peroxide oxidation Granular activated carbon Ion exchange
Building 374	<ul style="list-style-type: none"> Water above discharge to ground limits Water not accepted by WWTP Water has radionuclides, but no organic constituents 	Flash evaporation (Steam-heated reactor with spray evaporation)

5.2 QUARTERLY INCIDENTAL WATER DISPOSITIONS

Fifteen (15) incidental waters were sampled and dispositioned during the second quarter of FY99 (January, February, and March). The majority of these were associated with routine Site activities, such as dewatering building foundation drains and accessing utility pits and manholes. The following table summarizes the location and route of disposal for those incidental waters sampled.

Table 5-2. Quarterly Incidental Water Dispositions FY1999 (January, February, and March)

Location/ Building	Location Type	# of Incidental Waters	Route of Disposal
130	Utility Pit	1	Treatment
371	Secondary Containment	1	Treatment
566	Fire Suppression System	1	Treatment
707	Excavation	1	Treatment
729	Building Pit	1	Treatment
776	Compressor	1	Treatment
790	Flooded Room	1	Treatment
875	Foundation Drain	1	Treatment
886	Foundation Drain	1	Discharge to Ground
T893B	Secondary Containment	1	Treatment
PU & D Yard	Drum	2	Treatment
Industrial Area	Manholes	3	Treatment-(1); Discharge to Ground-(2)

The incidental waters requiring treatment were dispositioned to the following Site treatment facilities as discussed previously.

- Building 995 – WWTP 4
- Building 891 – CWTF 4
- Building 374 4